July 1961

Special report

METAL BUILDINGS dig in on the railroads

Railway TRACK and STRUCTURES

Yard work can be mechanized

p. 29

Recorder car inspects track up to 100 mph

A Simmons-Boardman TIME-SAVER Publication

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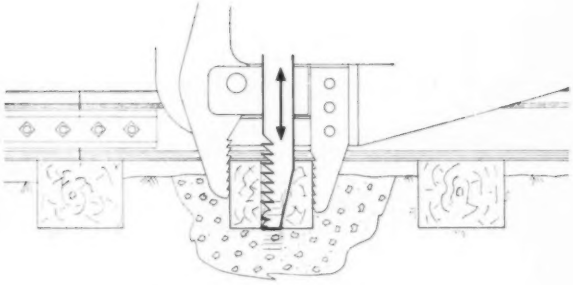
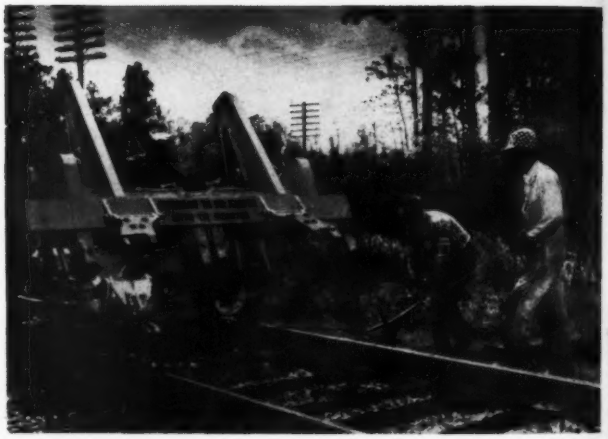
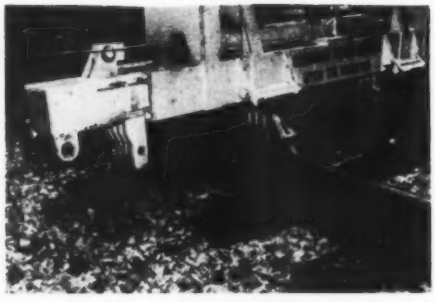
with the Kershaw

Dual Tie Saw *and* Tie Bed Scarifier







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2

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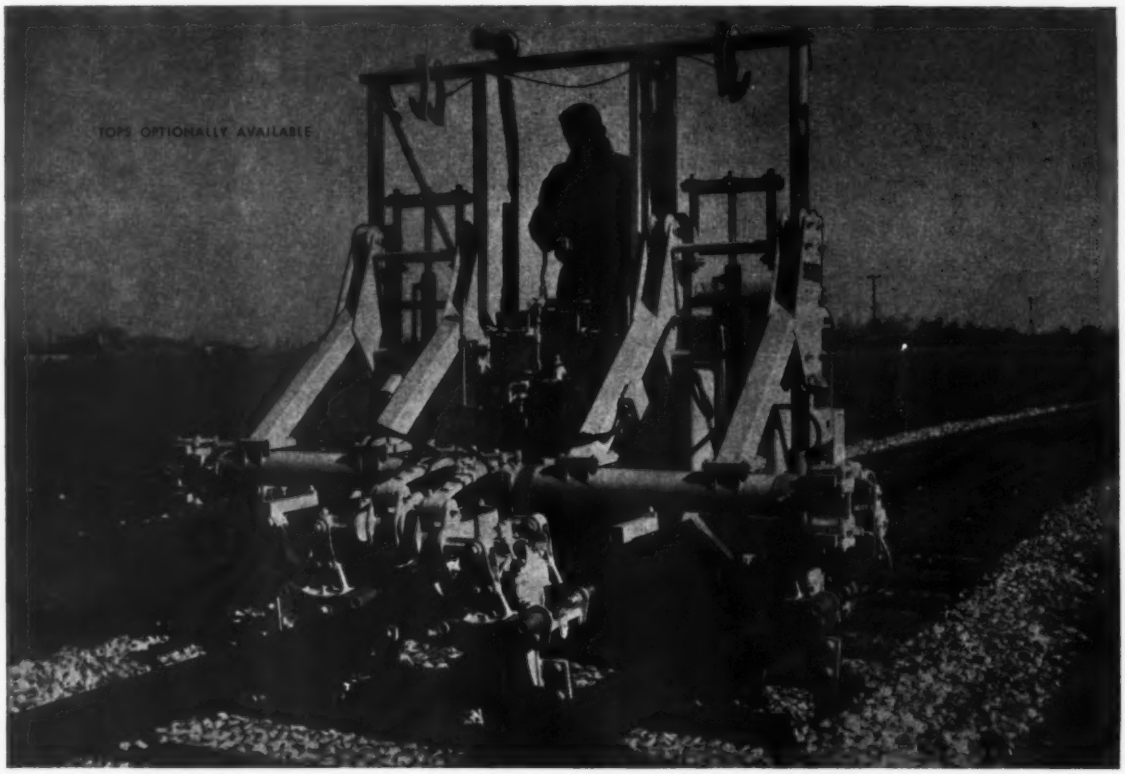

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MODEL JSMT: Has gasoline engine and 4 TM1161 Vibratory Tamping Units. This is an excellent machine for work in all but the most difficult going . . . an ideal all-around tamper for yard and branch line spot tamping and surfacing work, tightening up behind the tie gang and emergency tamping. OK, too, for general use in small or soft ballasts. Excellent for new construction and high lift ballast insertions anywhere.

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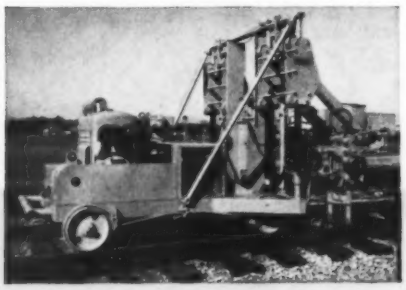

R1-5

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JULY 1961 • Vol. 57, No. 7

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Don't miss . . .

Snow in August! Not exactly, we're just going to write about it! A special report will bring you information on the latest methods and equipment designed to help you in the coming battle with snow and ice.

. . . in the August issue

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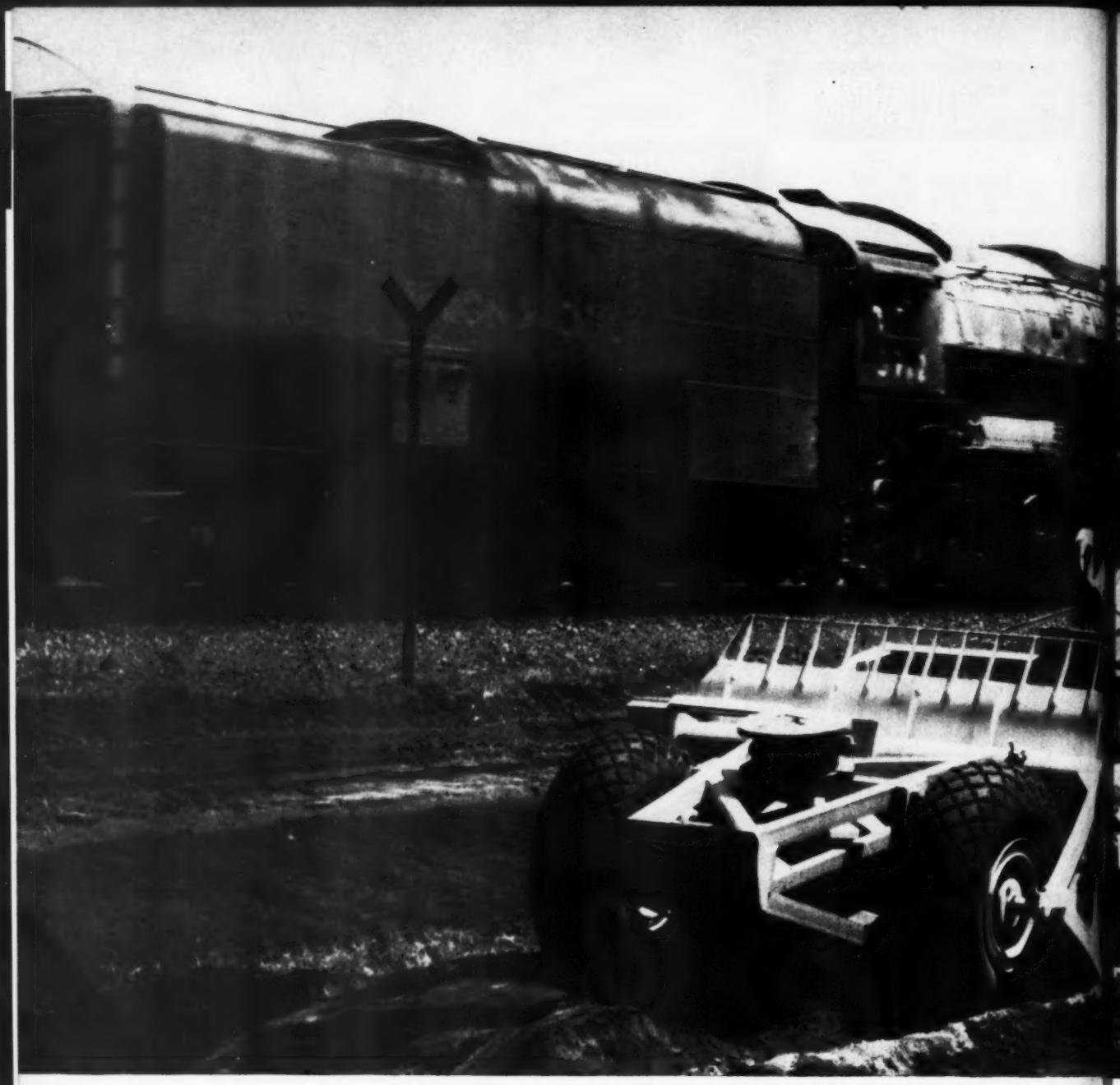

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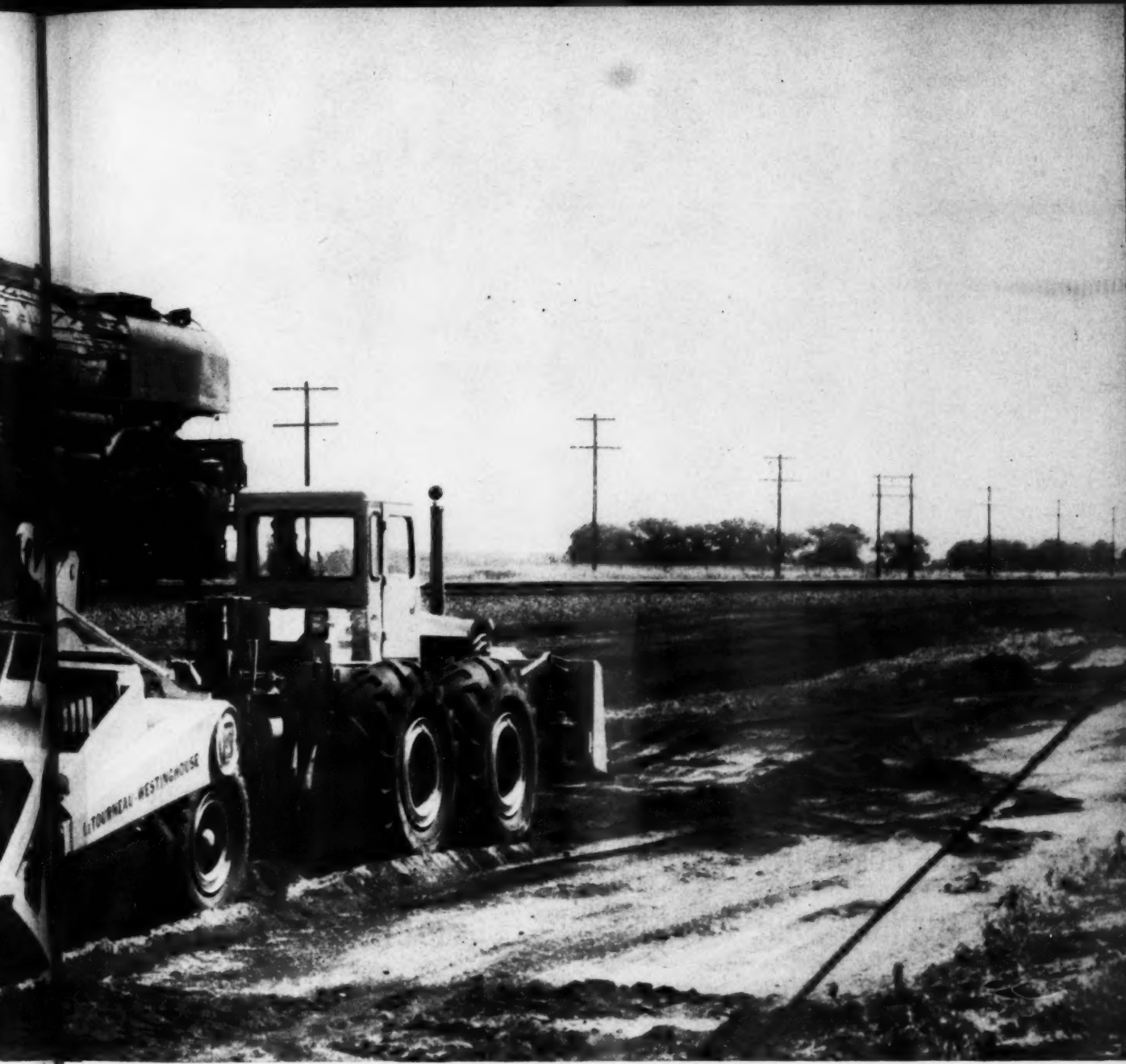

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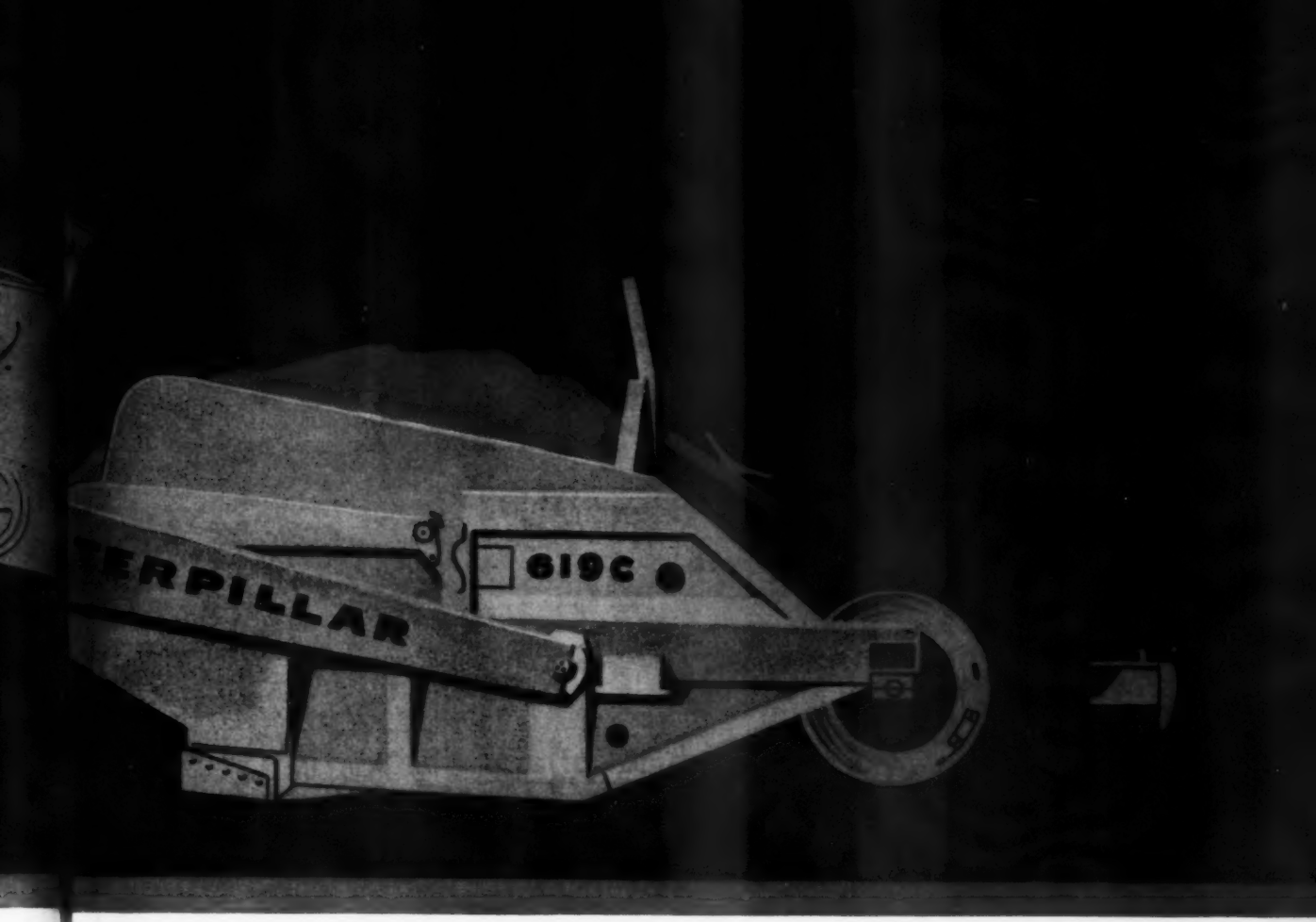
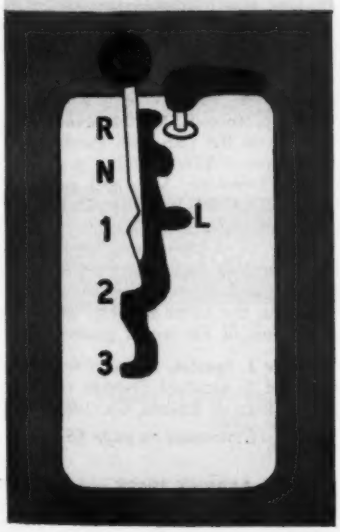
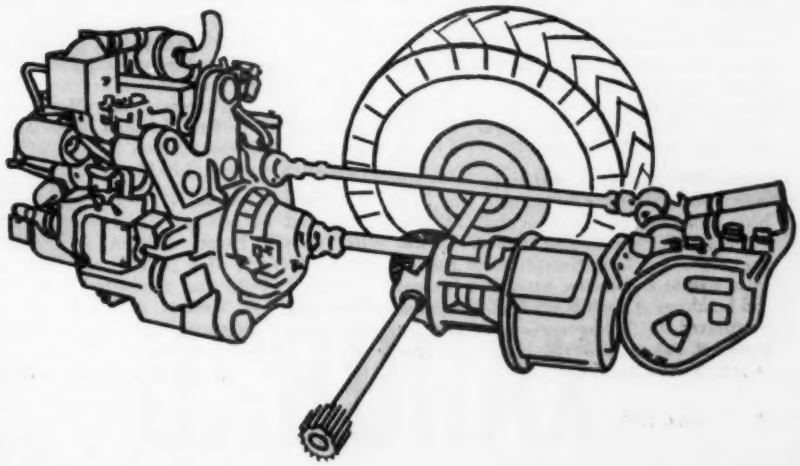




New 280 HP 619C offers choice of power shift transmission for faster, easier operation or direct drive transmission. Air actuated, live power cable control reduces operator effort. New, bigger 26.5 x 29 (22 ply) tires improve roadability. Top speed: 30 MPH. Capacity of matching Lowbowl scraper: 18 cu. yd. heaped, 14 cu. yd. struck. Also available: 25 ton PR619 Rear Dump Trailer built by Athey Products Corp.

New power shift transmission provides 9 speeds forward with just 3 shifts. One lever gives operator instant selection of 3 speed ranges . . . dial indicator tells him **when** to shift. Within each speed range, transmission **automatically** shifts to torque divider drive, direct drive or overdrive to match job conditions. The 619C with power shift transmission always operates at the right speed and power for the job at hand.

New, more powerful Cat D340 Engine (280 HP maximum, 250 HP flywheel at 1900 RPM). This economical 4-cylinder engine burns No. 2 fuel oil . . . has parallel-ported dual intake and exhaust valves and overhead camshafts for most efficient operation . . . has pressure ratio controlled turbocharger and aftercooler. Swingaway dash and pivoted crankcase guard simplify servicing. Unit construction assures easy servicing: engine, transmission, planetary final drives can be removed without disturbing adjacent components.



NEWS ABOUT PEOPLE

CANADIAN NATIONAL—R. J. Hansen has been appointed regional engineer, St. Lawrence region, with headquarters at Montreal, Que. **Leland McKeage,** structural engineer at Montreal, retired recently after 43 years of service.

FRISCO—L. S. Newman has been appointed assistant architect, with headquarters at Springfield, Mo.

ILLINOIS CENTRAL—W. F. Stewart, supervisor track at Dyersburg, Tenn., has been transferred to Fulton, Ky., succeeding **J. S. Mills** who retired recently. Mr. Stewart is succeeded by **B. G. Sykes,** supervisor track at Durant, Miss.

MILWAUKEE—H. H. Kruse, chief carpenter at Minneapolis, Minn., has been promoted to assistant supervisor bridge maintenance, with headquarters at Chicago, succeeding **R. R. Cheney** who has retired after 47 years of service. Mr. Kruse is succeeded by **F. O. McGrew,** chief carpenter at Madison, Wis.

MISSOURI-KANSAS-TEXAS—R. N. Wagnon, bridge engineer at Denison, Tex., has been promoted to engineer of structures with the same headquarters. Mr. Wagnon is responsible for the duties of the former bridge engineer and architect. In addition, **J. G. Carver** and **L. L. Whetzel** have been appointed assistant engineers of structures, also with headquarters at Denison.

MISSOURI PACIFIC—A. R. Miller, general land agent, St. Louis, Mo., has been promoted to assistant to chief engineer there, succeeding **W. D. Kirkpatrick** who has been promoted to chairman, Branch Line committee, with headquarters remaining at St. Louis.

NORTHWESTERN PACIFIC—Olof G. Linde, senior assistant division engineer on the Southern Pacific at Los Angeles, Calif., parent company of the NWP, has been promoted to division engineer at San Rafael, Calif. Mr. Linde succeeds **C. E. Neal** whose promotion to assistant engineer maintenance of way and structures on the SP was noted in the May issue.

ROCK ISLAND—W. L. Boothe, roadmaster at Cedar Rapids, Iowa, has been promoted to general roadmaster at Fairbury, Neb., succeeding **J. H. Kraemer** whose death is noted elsewhere on this page. **O. E. Patten,** track supervisor at Rock Island, Ill., has been promoted to roadmaster at Cedar Rapids, succeeding **F. E. Detter** who in turn succeeds Mr. Boothe.

SOUTHERN—Tinker W. McCardle, assistant supervisor track at Birmingham, Ala., has been promoted to supervisor track at New Orleans, La., succeeding **Robert L. Andrews** who has been transferred to Laurel, Miss. **Arthur E. Johnson,** supervisor bridges and buildings at New Bern, N. C., has been transferred to Valdosta, Ga., succeeding **James H. Askew, Jr.,** who has been transferred to Atlanta, Ga.

SOUTHERN PACIFIC—Lee D. Marsden, assistant division engineer at Sacramento, Calif., has been promoted to division engineer at Ogden, Utah, succeeding **R. E. Frame,** transferred.

Joseph W. Ferguson, assistant division engineer at Los Angeles, Calif., has been promoted to senior assistant division engineer, with the same headquarters. Mr. Ferguson succeeds **O. G. Linde** whose promotion to division engineer of the Northwestern Pacific, a subsidiary of the SP, is noted elsewhere on this page.

Obituary

J. H. Kraemer, general roadmaster on the Rock Island at Fairbury, Neb., died on May 19 at the age of 59.

Biographical briefs

Charles E. Neal, 51, who was recently promoted to assistant engineer maintenance of way and structures on the Southern Pacific at San Francisco, Calif. (*RT&S*, May, p. 10), was born at Oakland, Ore. Mr. Neal entered the service of the SP in 1926 as a stationary fireman in the motive power department at Oakridge, Ore. Subsequently he served as crane and shovel fireman, locomotive engineer, carpenter, tunnel miner and crane and machine operator. Mr. Neal was promoted to section foreman in 1937, general foreman in 1941, roadmaster the following year and general track supervisor in 1946. He was further promoted to division engineer of the Northwestern Pacific, a subsidiary of the SP, at San Rafael, Calif., in 1954, the position he held at the time of his recent promotion.

Norman E. Oleson, 51, who was recently promoted to roadmaster on the Milwaukee Road at Savanna, Ill. (*RT&S*, Dec., p. 10), was born at Marvin, S. D. He entered the service of the Milwaukee in 1926, being promoted to section foreman in 1937 and extra gang foreman two years later. From April 1941 to November 1945 he was in military service. He returned to the Milwaukee in the latter year as a section foreman. Mr. Oleson was promoted to general foreman of an extra gang in 1955, the position he held at the time of his recent promotion.

Francis S. Hutton, 47, who was recently promoted to assistant chief engineer of the Grand Trunk Western at Detroit, Mich. (*RT&S*, May p. 10), was born at Hamilton, Ont., and graduated from the University of Toronto in 1936 with a Bachelor of Science degree in civil engineering. Mr. Hutton entered railway service with the Canadian National, parent company of the GTW, in 1936 as a chainman, later serving as rodman and instrumentman. From 1942 to 1946 he was in the Canadian Army, serving in Europe with the military railway service. He was appointed assistant engineer at Stratford, Ont., in 1946, later being promoted to assistant division engineer at London, Ont., and division engineer at Hornepayne, Ont. From 1949 to 1955 he served as district engineer for the Board of Transport Commissioners at Winnipeg, Man., and Calgary, Alta. Mr. Hutton returned to the CNR in 1955 as office engineer at Toronto, Ont., later being promoted to assistant to chief engineer there. He was further promoted to engineer maintenance of way at Toronto in 1959, the position he held at the time of his recent promotion.

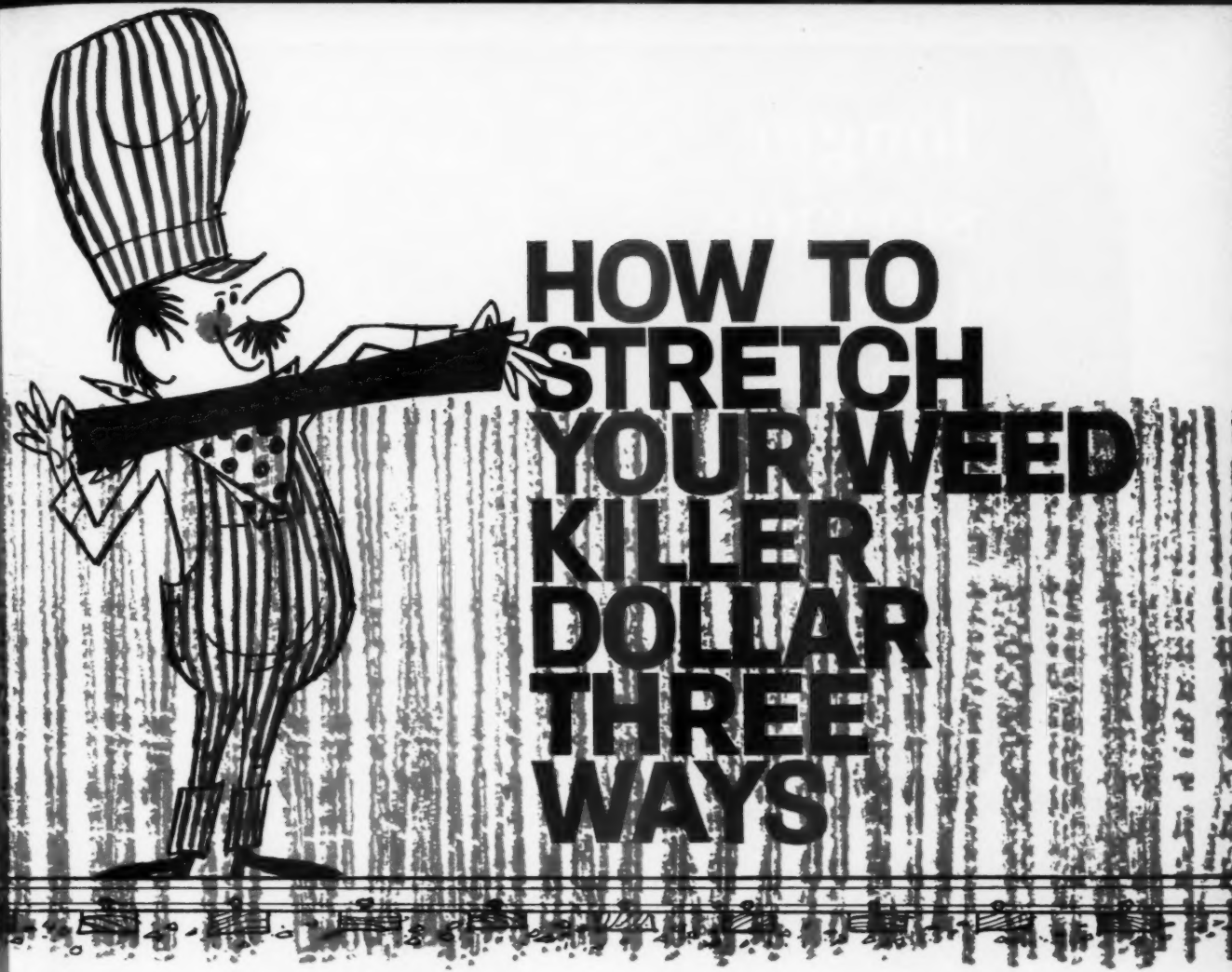
Frank H. Gresham, 38, who was recently promoted to roadmaster on the Frisco at Chaffee, Mo. (*RT&S*, Dec., p. 10), was born at New Albany, Miss. He entered the service of the Frisco in 1942 as a water service helper at Memphis, Tenn. From April 1943 to September 1947 he was in the U.S. Navy, returning to the Frisco in the latter year as a crossing flagman at Birmingham, Ala. He was appointed truck driver-laborer at Memphis in 1952 and was promoted to assistant district gang foreman there four years later. Mr. Gresham was further promoted to district gang foreman at Memphis in 1957, serving also as extra gang foreman there. He was advanced to assistant roadmaster, also at Memphis, in July 1960, the position he held at the time of his recent promotion.

Morris Day, 44, who was recently promoted to roadmaster at Lawton, Okla. (*RT&S*, Dec., p. 10), was born at Bangert, Mo. He entered the service of the Frisco in 1941 as a section laborer, being promoted to section foreman two years later. Between 1949 and 1959 he served as foreman on several district and extra gangs, district patrol gang foreman and assistant foreman on a mechanical gang. Mr. Day was promoted to assistant roadmaster at Tulsa, Okla., in 1959. He was serving in that capacity at Sherman, Tex. at the time of his recent promotion.

Robert A. Spencer, 31, who was recently promoted to assistant division engineer on the Canadian Pacific at Montreal, Que. (*RT&S*, Feb., p. 10), was born at Lewiston, Me., and received his higher education at the University of Maine. He entered the service of the CPR in 1955 as a transitman at Brownville Jct., Me., later being promoted to junior engineer and assistant engineer. He was serving in the latter capacity at Montreal at the time of his recent promotion.

Wilbur J. Parrish, 33, who was recently promoted to assistant division engineer on the Southern at Atlanta, Ga. (*RT&S*, May,

(*Continued on page 56*)



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NEWS NOTES

. . . a résumé of current events throughout the railroad world

A massive modernization program to the extent of "more than a quarter of a billion dollars" is planned by C&O and B&O managements if their proposed affiliation is approved. Details of the program were told to the ICC by C&O vice presidents J. E. Kusik and M. I. Dunn at open hearings held on competing applications of the C&O and the NYC for control of the B&O.

Net income of Class I railroads amounted to $4 million in April, compared with $48 million in April 1960. For the first four months of 1961, the Class I roads as a whole operated at a deficit of $9 million. Forty railroads failed to earn their fixed charges in the first four months of 1961. Rate of return for the 12 months ended in April averaged 1.52 per cent for all Class I roads.

Teamster President James R. Hoffa has agreed to limit the penalty fee to be levied against railroad piggyback shipments. The $5 surcharge for every truck trailer loaded on a flat car will not be charged where the freight traffic was merely railroad box-car freight diverted by the railroad to piggyback.

Plans of the Department of Commerce to assume a more aggressive role as the President's "principal advisor on transportation matters" have been outlined by Clarence D. Martin, Jr., the department's undersecretary for transportation. He told a House appropriations subcommittee that there will be a change from the past when, as he put it, there was "no serious or continuing effort by the department to discharge the responsibility assigned by law to develop overall transportation policy." The work of his office "is not to be a further series of studies," Mr. Martin said, adding: "Rather it will translate the intensive and expensive studies of recent years . . . into action programs."

The Erie-Lackawanna will order materials for two major projects—construction of a $7.5-million electronic freight yard at Buffalo, N. Y., and track and signal changes budgeted at more than $2 million. Projects will be financed with proceeds from a $15-million federally guaranteed loan. The new Buffalo yard, which is scheduled to go into operation in 1962, will be built on the site of the present Lackawanna yard; the former Erie yard will be closed. Track and signal changes will include single-tracking and installation of CTC between Scranton and Stroudsburg, Pa., 44 miles, and between Dalton, Pa., and Conklin, N. Y., 39 miles.

Unions representing railroad operating employees opened their attack on railroad management's demand for an end to "featherbedding." The attack was launched at the June 14 session of public hearings being held by the Presidential Railroad Commission, following conclusion of management's defense of its proposals.

Dues of a worker forced to join a union under a closed-shop agreement may not be used for political purposes if the worker objects. This decision was handed down in a recent ruling of the Supreme Court in connection with the "Looper case." Southern Railroad employees had protested that their constitutional right of free speech was infringed when they were forced to pay money for purposes they opposed. The Georgia Supreme Court had agreed and held the union-shop provision of the Railway Labor Act unconstitutional if any of the exacted dues went for political purposes. But the high court refused to strike down the union shop and remanded the case to the Georgia court to work out a fair dues-collection system.

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Removes up to 20 spikes a minute—requires only one operator! Fairmont's W84 Series B Spike Puller gets tie-renewal projects off to a fast start—makes short work of removing old spikes. It gives one man the hydraulic power to pull 15 to 20 spikes per minute—lets him pull them from both sides of both rails while the machine works in one direction!

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For fast, easy set-offs, this Fairmont Spike Puller is equipped with pneumatic tires and extension handles. The machine's light weight permits two men to remove the machine and clear the track in two or three minutes.

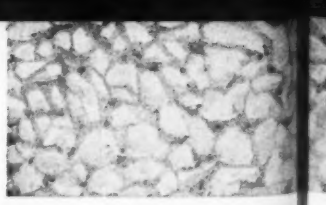
The W84 Series B Hydraulic Spike Puller is one of many Fairmont machines that are helping railroads speed tie-renewal programs, curb costs. Some of this additional equipment is shown below. Plan now to put this time-saving, cost-cutting power to work with your gangs. Call or write for details.

Fairmont equipment is available on lease.

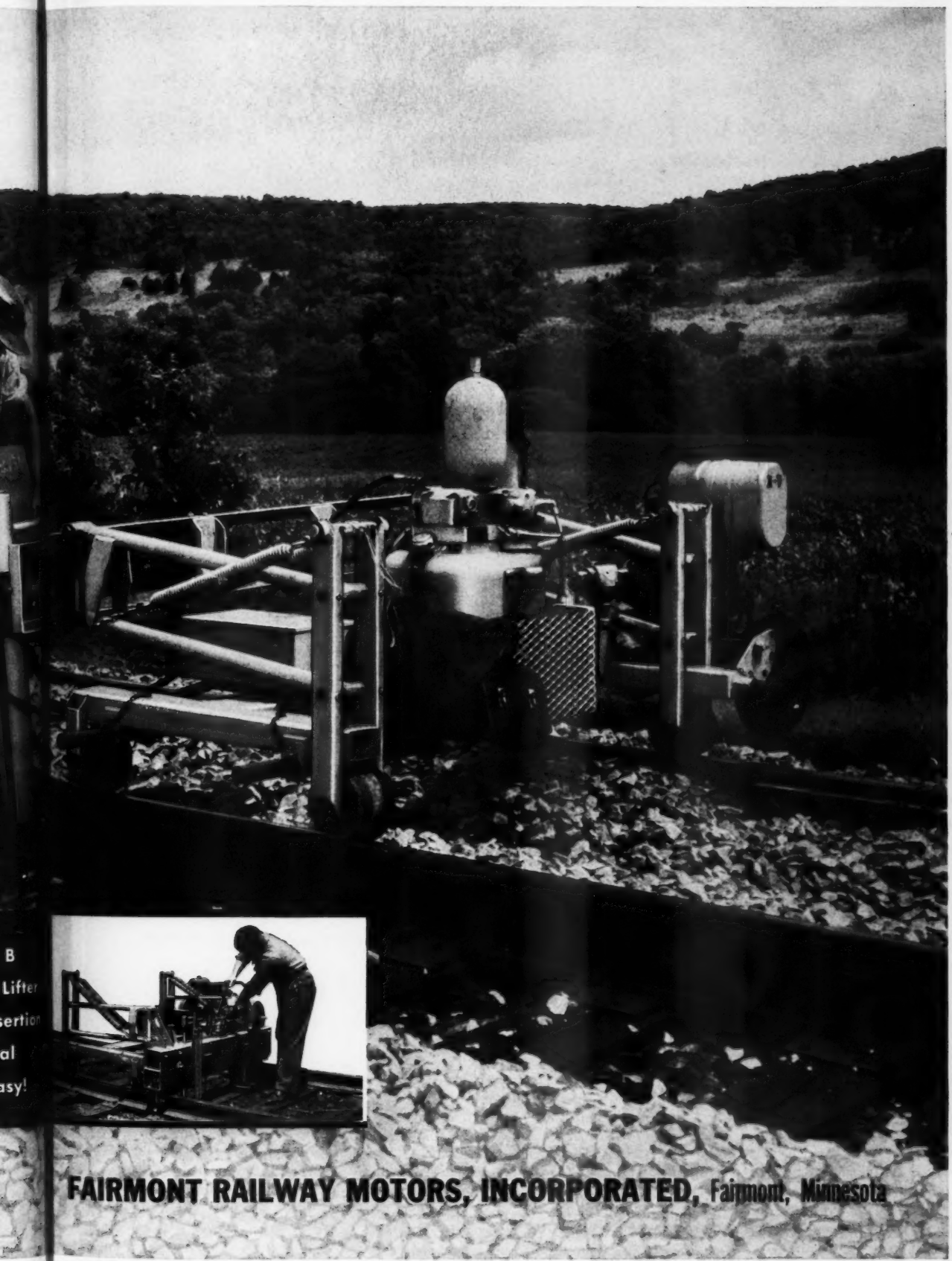
W87 SERIES B TIE BED SCARIFIER digs hard-packed, 10-foot tie beds at one-a-minute speed —is one-man operated.

W68 SERIES B HYDRAULIC TIE REMOVER removes one tie in 30 seconds, requires only one man as operator.

W90 SERIES A TIE HANDLER does three jobs — removes, inserts and repositions ties. Two men operate it.



W86 Series B Hydraulic Rail Lifter makes plate insertion and removal quick and easy!



FAIRMONT RAILWAY MOTORS, INCORPORATED, Fairmont, Minnesota

Architect-engineer: Leo A. Daly Company, Omaha, Nebraska

For new Los Angeles freight terminal...

Union Pacific's concrete shell roof gives 139,000 sq. ft. area with no interior columns

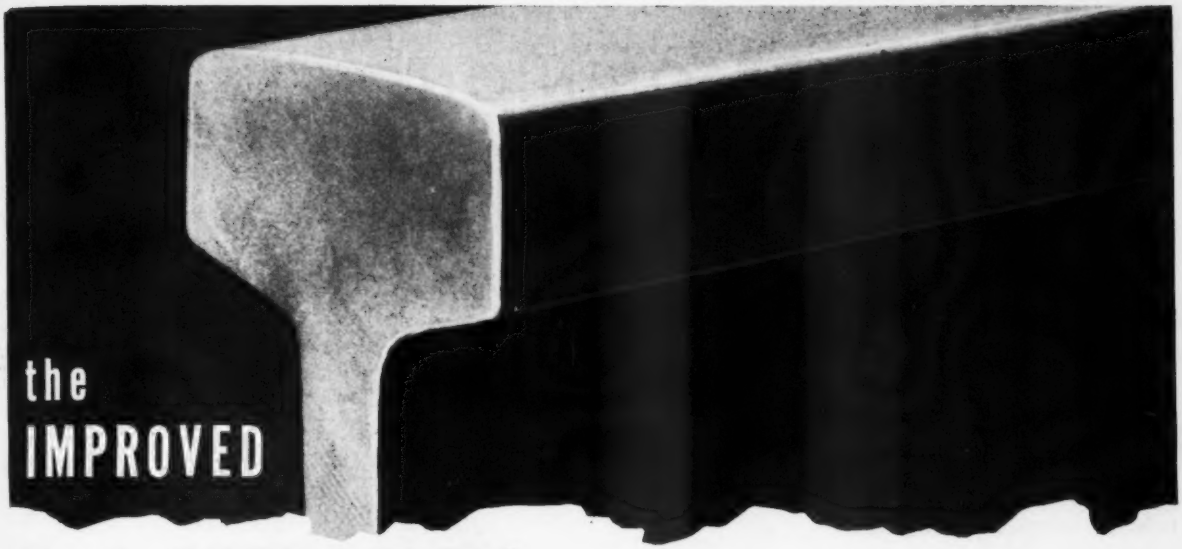
With its concrete multiple barrel shell roof, this new Union Pacific freight terminal provides 139,000 sq. ft. of enclosed area without a single interior column. Only 72 working days after concrete for the first shell was placed, all 30 shells and connecting edge beams were finished.

Rapid completion of the shells was made possible by reuse of 6 sets of movable forms. Each form was used five times, effecting important economies. Shells measure 117 ft. from end to end, with a clear span of 104 ft. between supporting columns. Over the loading dock, a 10-ft. section is cantilevered to provide a canopy. All walls are concrete, built by the tilt-up method.

Buildings contiguous to the terminal are also constructed of concrete. The office building, salvage area and dispatch office have curtain walls of precast concrete, faced with ceramic veneer—91 panels in all.

With its fresh functional design, its durability and low maintenance, Union Pacific's new structure reflects the growing use of concrete by progressive American railroads. Write for free literature: "*Design of Barrel Shell Roofs.*" (U.S. and Canada only.)

PORTLAND CEMENT ASSOCIATION Dept. A5-27, 33 W. Grand Ave., Chicago 10, Ill.
A national organization to improve and extend the uses of concrete



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Removing stress risers

Recently, Subcommittee 3 of AREA Committee on Track voted in favor of peening the edges of bolt-hole drillings in frogs and switch points with an air hammer and a suitable head, then finishing with a drift pin. The subcommittee also endorsed the practice of removing the raised metal of brands at the edges of bolt holes by grinding. Both the burrs and raised metal at these locations produce stress risers which reduces the fatigue life of the rail.

We believe this action will go far in reducing web and bolt-hole breaks in the frogs. The added cost of removing stress risers at bolt holes will probably be in the neighborhood of $5 per frog. The cost of taking a frog out of service and replacing the damaged end would run $50 or more. The high incidence of frog failures in service from bolt-hole breaks justifies the practice of peening.

We would go a step further. We believe the same practice should be applied to the bolt holes at the ends of strings of continuous welded rail.

Although bolt-hole breaks at these points are not as numerous as bolt breakage because of the current standard of drilling holes farther from the rail ends, such breaks do occur. The cost of cutting out a damaged end, replacing it and adding a joint outweighs the cost of peening and finishing the few bolt holes of welded rail.

Few railroads want to pay the cost of having this work done at the rolling mills. Probably, the place to have it done would be at the welding plant where sufficient time would be available while the string is being welded.

Where are benefits of M/W efficiency?

Where has the money gone? The money, that is, that maintenance of way departments have saved through greater efficiency.

On every road machinery has vastly increased the productivity per man-hour, resulting in greatly reduced unit costs. Reorganization of the M/W forces has contributed to the savings. So has the use of more durable materials and of means of making materials last longer. The result is that the average number of maintenance of way employees of Class 1 railroads went down from 238,000 in 1950 to 127,000 in 1959, a decrease of 46 per cent.

One might expect that such a sharp decrease in the number of employees on the payrolls would have been reflected in a decline in total maintenance of way and structures expenses. This expectation would seem to be more than ever in order considering that important items of maintenance work declined sharply during the period. Rail renewals, for example, dropped 65 per cent, while new tie insertions went down 47 per cent.

But total M/W expenditures didn't go down, at least not appreciably. As a matter of fact, the maintenance of way and structures expenses of the Class 1 roads for 1959, amounting to $1.23 billion, were only 4 per cent less than they were in 1950. This is a startling situation, even for those who are not particularly surprised at the figures. Here we have a decline of 46 per cent in the number of workers drawing pay, and decreases in the neighborhood of 50 per cent or more in two of the most important categories of work—and only a paltry 4 per cent decrease in total expenses.

So we come back to the question: Where has the money gone? Every informed M/W man knows, of course, that his hard-won savings have been soaked up by higher costs of materials and wages, principally the latter. From 1950 to 1959 the average hourly earnings of maintenance of way employees of Class 1 railroads went up from $1.38 to $2.27, an increase of 64 per cent.

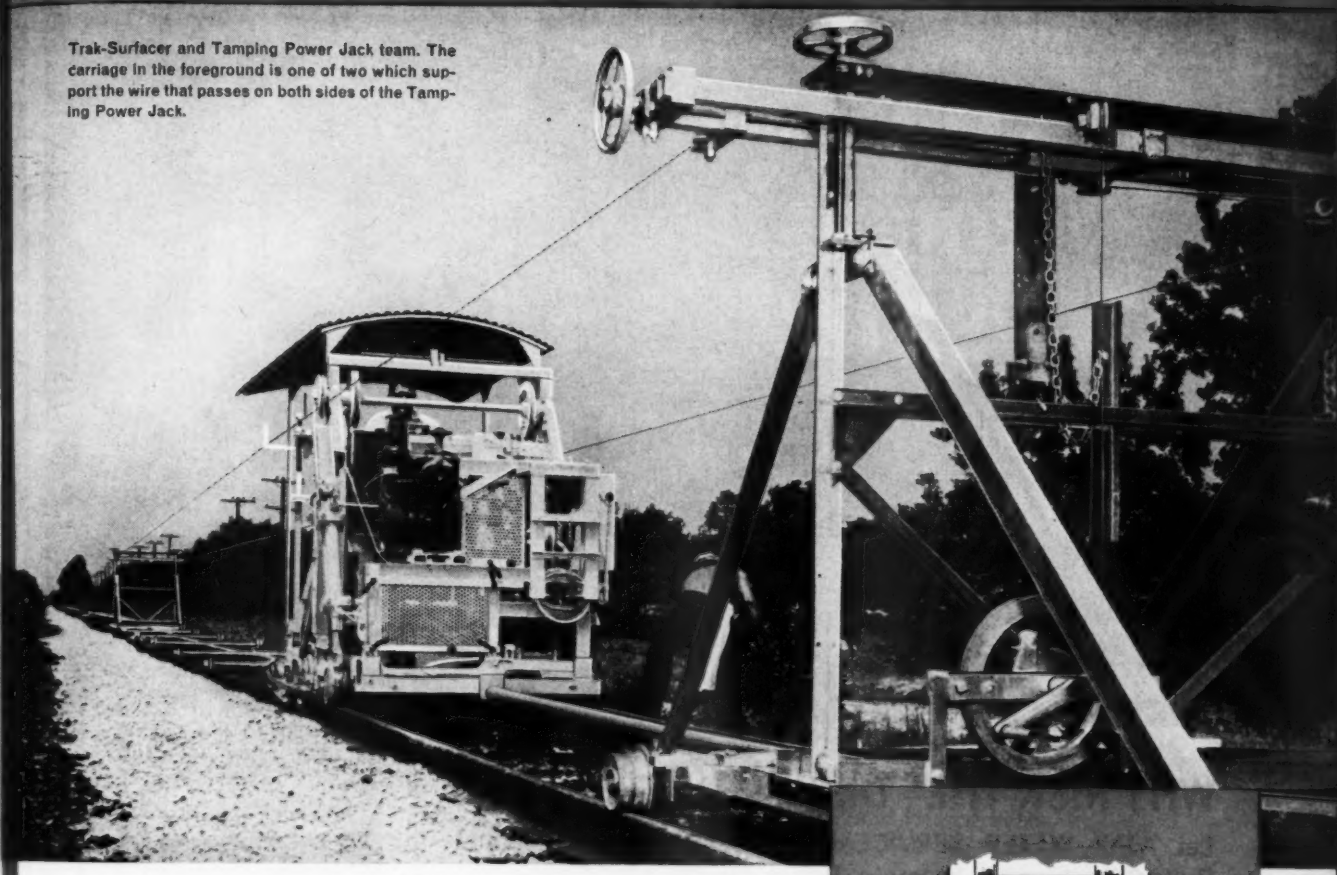
As they look back maintenance of way officers have every right to allow themselves a feeling of satisfaction over their accomplishments of the past decade. It is doubtful that any other class of supervisory officers anywhere can point to a comparable record of progress in developing efficient methods.

Yet this feeling of accomplishment must certainly be accompanied by a strong sense of frustration. For no part of this progress has been converted into tangible benefits for the railroads. In fact, while so much progress was being made in developing efficient methods the condition of the properties on many, if not most, roads was declining. In other words it would appear that the sole beneficiaries of M/W progress have been the employees.

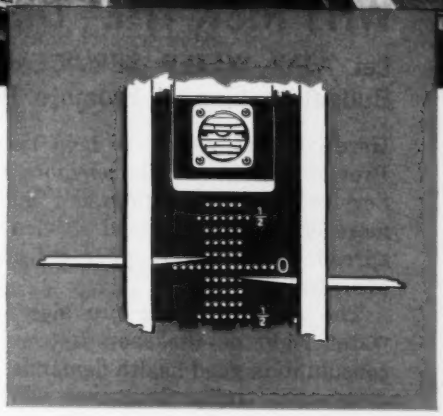
The hope of every M/W man is that he will see the time when conditions will become such that part of the savings he has made possible can be returned to him in the form of more materials and adequate maintenance programs.

FOR RAISING TRACK...

...you can't beat the Speed, Accuracy and Simplicity of the NORDBERG TRAK-SURFACER



Trak-Surfacer and Tamping Power Jack team. The carriage in the foreground is one of two which support the wire that passes on both sides of the Tamping Power Jack.



...here are four reasons why:

1. The 125′-25′ relationship of wire length assures you of improving track profile and surface at least FIVE TIMES.
2. The scheme of Pointer in contact with Wire is the acme of simplicity.
3. The Pointer multiplies track irregularities THREE TIMES—$\frac{3}{8}$″ of Pointer Movement as seen by the operator is actually only $\frac{1}{8}$″ of Track Movement.
4. Also extremely important, the Pointer tells the operator exactly what he is doing and shows him exactly how much the track is low or high.

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R461

NORDBERG MANUFACTURING COMPANY, Milwaukee 1, Wisconsin

* The Dipper of Disease — the old-fashioned, germ-laden, mouth-to-mouth drinking vessel which spreads infection and sickness. Modern standards of drinking water service prohibit its use.

WHY RISK THE "DIPPER OF DISEASE"?*

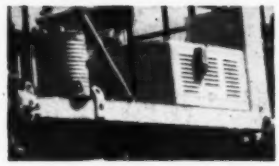
Let AJAX WATER SERVICE Help Keep Your Maintenance Budget in Line . . . Promote Better Health and Safety

Here's the easy way to help keep your maintenance costs down. Provide each crew with *portable* AJAX Refreshing Drinking Water Service. It will save time and money by helping them do their jobs more efficiently. Personal service AJAX Cups effectively lower the spread of colds and other infections. Guard health. Help reduce absenteeism.

The AJAX Service provides a generous supply of fresh, cool water right on the spot. Improves morale. Encourages the water consumption good health demands. Reduces fatigue. Eliminates time-consuming walks. Increases worker efficiency. Imprinted, AJAX Cups promote safety. And they end "the dipper problem" forever.

You'll be surprised at how much the *portable* AJAX Water Service can help your maintenance budget. Write for cup samples and details.

HOW AJAX SERVICE HELPS ONE RAILROAD SAVE



Reports from one large road indicate that it enjoyed worthwhile savings in its maintenance budget after it adopted the complete AJAX Water Service. One big advantage is the fact that the standard installation fits right onto the track maintainer itself. Always ready; always at hand.

The AJAX Water Cooler is a heavy duty, 5-gallon unit. It is easy to sterilize and keep clean. Well insulated to keep water cool. The AJAX Cup Dispenser can be mounted on the cooler or attached separately to the track maintainer. It holds 300 AJAX Cups in the 4- or 6-oz. size. AJAX is the cup that dispenses open, ready to use. Available plain or imprinted with safety messages.

If you are looking for a way to increase worker efficiency and still keep your budget in line, look into AJAX.

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for durability, strength, economy. Steel

New design method for Armco MULTI-PLATE used to install boat pass under tracks

An Armco Pipe 18 feet in diameter, 216 feet long, helped solve a potentially high-cost problem when engineers had to relocate the Union Pacific tracks because of the new Ice Harbor Dam, Washington. Both sides of the elevated roadbed will be flooded when the dam is completed. And pleasure craft must have access to both sides via a waterway under the tracks.

The simple, economical structure—expanded to a diameter of 18 feet by utilizing a compression-ring theory introduced by Armco last year—offered a means of access unmatched in economy by any other method.

This special method, opening the way for Armco drainage structures larger than ever before thought possible, expands the cost saving potential of Armco MULTI-PLATE® in many railroad applications.

For a detailed explanation of this new design method, or for an engineering evaluation of your present needs, simply fill out and mail the coupon. It may save you money.

Armco Drainage & Metal Products, Inc., 4121 Curtis Street, Middletown, Ohio.

☐ Send detailed explanation of Armco's Compression-ring theory.

☐ Have Armco Sales Engineer call without obligation to study our problems.

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CITY_____ ZONE____ STATE_____

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ARMCO Drainage & Metal Products

Pennsylvania Railroad uses 10 BANTAM RAIL-ROADERS®

A BANTAM Rail-Roader is shown here completing a bridge modification job in Illinois. BANTAM Rail-Roader carriers are also used for mounting other equipment to handle maintenance of structures.

. . . to step up mechanization program . . . speed work schedules on track and off with "railroader's handy man"!

BANTAM Rail-Roader® is today's versatile crane-excavator, the one machine of its kind that isn't tied down to just rails or roads—it works and travels both!

That's why the BANTAM Rail-Roader figures so importantly in fast-stepping programs of modernization and maintenance for railroads all over the country—it cuts down the amount of equipment needed, and makes manpower go further.

BANTAM Rail-Roader is the perfected on/off-track crane. Thousands of miles of travel and hundreds of different jobs have proved this one all-purpose machine with simple, retractable dolly-wheel mountings that quickly permit moving from road to rail and vice versa.

You can make surprising savings with a BANTAM Rail-Roader—in B&B and track work of all kinds . . . in aiding crews to handle more comprehensive programs. See your BANTAM railroad distributor—or write for new illustrated catalog on BANTAM Rail-Roaders.

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World's largest producer of truck crane-excavators

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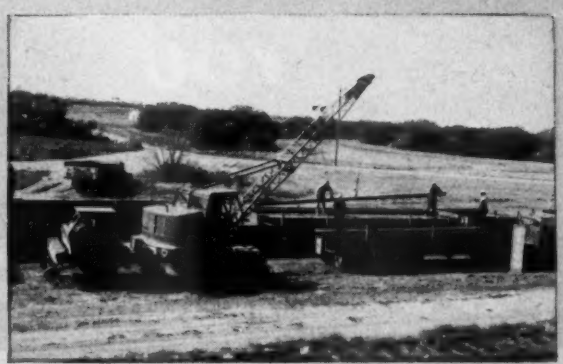
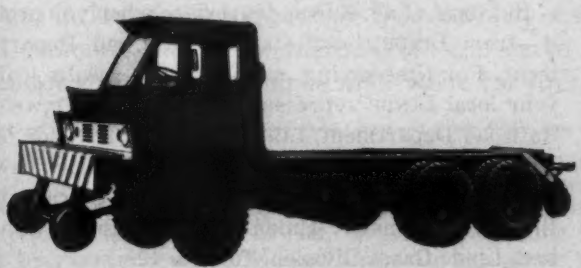
BANTAM RAIL-ROADER is the all-purpose machine . . . does all kinds of work anywhere!

High-speed, on-track performance is provided by BANTAM's exclusive rail mounting design. Front and back retractable dolly wheels permit accessibility to any job. To go from road to rail, BANTAM Rail-Roader simply moves on track at any grade crossing. It's easy, fast, safe. Special high-speed reversing transmission gives up to 45 m.p.h. in reverse as well as forward.

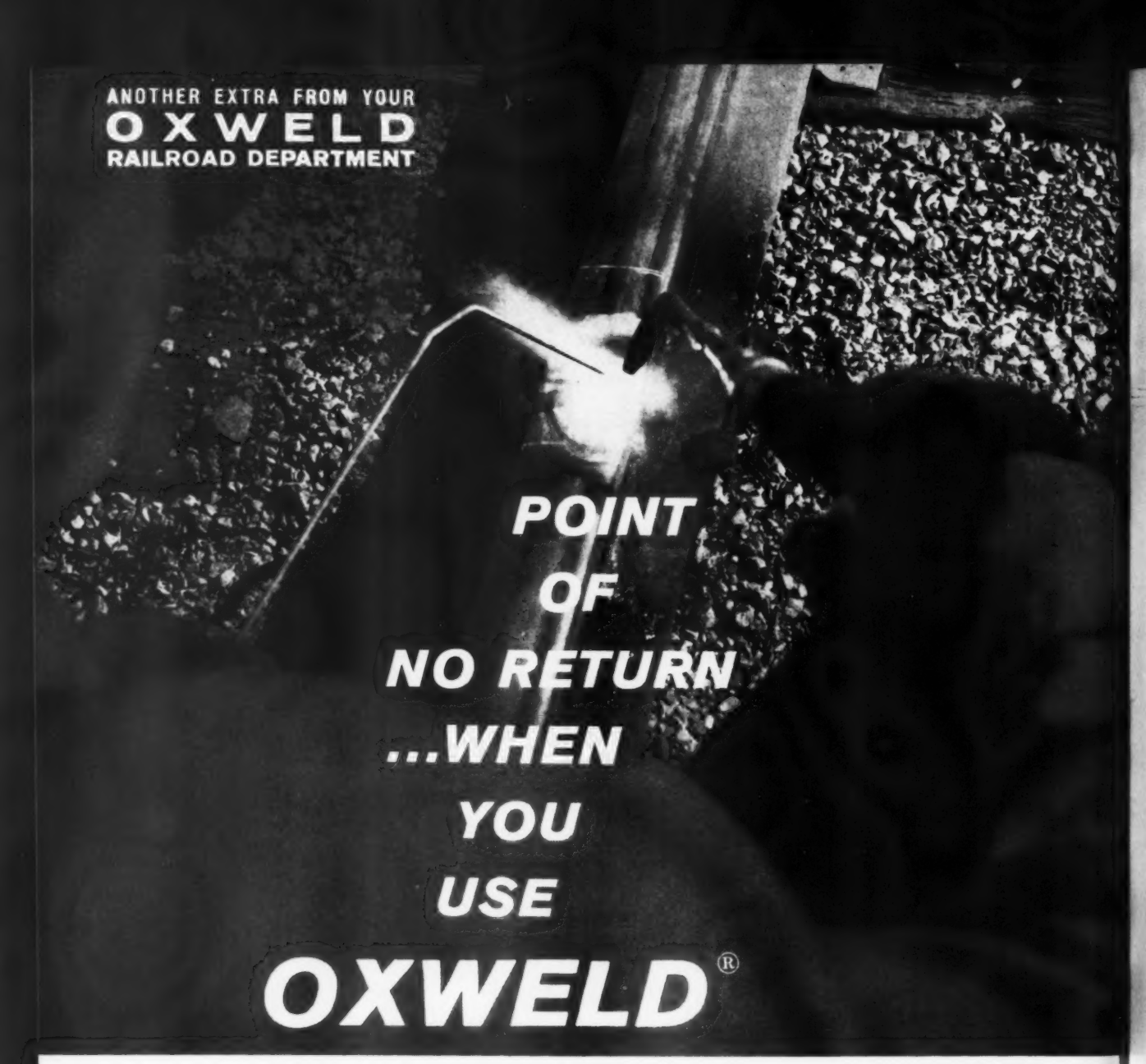
Unlimited working range. You name it—BANTAM Rail-Roader does it. Big capacity (now up to 11 tons), plus easy convertibility with 11 BANTAM-built attachments. You can handle lifting, excavating, loading, pile-driving or stock-piling jobs anywhere—on track or off. BANTAM optional remote control lets operator move carrier exactly as he wants—right from the crane cab.





BANTAM-built carriers—BANTAM is the only machine its size in the industry offering a complete line of carriers built by BANTAM for shovel-crane mounting. Choice of 8- or 11-ton models with 6 x 6 drive for maximum traction on and off tracks. With BANTAM, all driving axle tires ride on the rails, not on ties or "in air"—thereby eliminating binding, tearing, derailing dangers and increasing tractive power. Also, BANTAM self-propelled Rail-Roaders with one engine for travel and work.

See Rail-Roader in action! Now is the time to see a showing of BANTAM's color motion picture which tells the complete BANTAM Rail-Roader story. See BANTAM in action on all kinds of B&B and track operations. Watch a step-by-step showing of modern ribbon rail setting using unique BANTAM Rail Threader (pat. pend.). Write for film details.



YOU WON'T have to go back—when you repair engine burns or battered rail ends with OXWELD rods and welding apparatus.

OXWELD apparatus is probably in use right now on your trackage. If you talk to the men who work with it day-in and day-out, they'll tell you the OXWELD brand stands for reliability. Basic reason: at LINDE, railroad equipment is handled by railroad specialists.

You can get everything for railroad welding—from goggles to torches—under the OXWELD brand. No off-quality lines, no second-line parts. Everything has been engineered to the most modern and exacting standards. In fact, many of them have been developed and patented by LINDE. The result is the most complete line of materials and accessories in the railroad industry.

But most of all, it includes service when you need it—from LINDE's own OXWELD Railroad Department. For time-saving, money-saving results, call your local LINDE representative, or write Oxweld Railroad Department, Linde Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, N. Y., 230 N. Michigan Avenue, Chicago 1, Illinois. In Canada: Union Carbide Canada Limited, Linde Gases Division, Toronto 12.

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LINDE COMPANY **UNION CARBIDE**

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Railway TRACK and STRUCTURES

JULY 1961

Vol. 57, No. 7

THE BUILDINGS in these views illustrate the wide range of metal building types and sizes being used on the railroads. Above is a frameless building at a car-washing platform. The freighthouse at right is a truss-type metal building 138 ft wide and 500 ft long, with skylights of translucent panels.

An RT&S staff report

Metal buildings dig in on the RRs

Pre-engineered metal buildings have been a common sight on the railroads for many years. Now the roads are using more buildings of this type than ever before. This development and the reasons for it are discussed in this article which is based primarily on a comprehensive survey made among railway engineers and architects. Also included are suggestions from railway men on improvements that the manufacturers can make in metal buildings that will enhance their value for railroad use.

● In providing buildings to meet the needs of his company as laid down by management the average railroad building engineer or architect is confronted with some pretty definite stipulations. These require him to furnish buildings that are low in first cost and economical to maintain, while at the same time possessing a degree of flexibility to meet changing operating conditions.

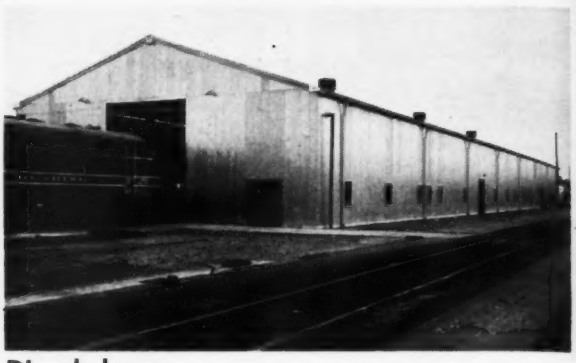
To a growing extent the building engineer is meeting these requirements by specifying pre-engineered metal buildings. This fact was brought out during the course of a recent comprehensive survey made among railroad building engineers and architects. The reasoning behind the increased use of metal buildings, the types of structures for which they are being employed, the practices of different roads relative to the erection, painting, insulating and finishing of such buildings, and the thinking of railroad engineers regarding the need for further improvement in available designs were also explored during the investigation.

Factors that have undoubtedly had an important bearing on the increased use of metal buildings on the railroads include the large range of designs and roof spans now available. For the larger buildings, such as freight warehouses, the building engineer now has a selection of rigid-frame or truss-type structures with clear spans ranging up to 120 ft and even more. At the other end of the spectrum are the frameless, or self-supporting, structures in sizes that make them suitable for use as pumphouses, tool houses, service buildings and other small structures.

In between is a range of roof spans and side-wall heights to suit practically any need that may be found on a railroad. Structures of any length desired may be obtained

They're being used for many purposes

Freight stations . . .



Diesel shops . . .

Metal building dig in on RRs cont'd

simply by using the required number of standard units. Some of these are rigid-frame buildings, some are of the frameless type, some are trusses of various types, in others the roof supporting members are tapered beams. Almost all types are available with gable or single-slope roofs. In recent years the trend has been toward flatter roof slopes, giving a low silhouette effect.

Siding and roofing are available in galvanized metal, in metal with factory-applied finishes, in Aluminized steel and in aluminum. For skylights most manufacturers offer translucent plastic sheets that may be substituted for roof panels. In recent years improved purlin systems have been introduced that are said to promote economy and flexibility and to have other advantages. Another recent development consists of insulated panels for use where buildings must be heated.

Shop fabrication work required in the manufacture of metal bulidings is generally done by welding. For field-assembly work the usual practice is to furnish high-tensile bolts. Thus, as one building engineer put it, assembly of a pre-engineered building in the field is somewhat comparable to putting together a king-size erector set.

Nearly a score of railway architects, building engineers and other officers were queried on their experiences with metal buildings. All indicated that they had used metal buildings for a number of years. All but two went on to say that they had stepped up their use of such buildings in recent years.

Reasons for popularity

Why have metal buildings become more popular on the railroads? Low first cost, especially for unheated buildings, economical maintenance, speed and ease of erection, fire-resistant qualities, low design cost and salvageability for relocation elsewhere were the primary factors cited in answer to this question.

LOW-SILHOUETTE effect is a feature of some metal-building designs. These metal buildings consist of an office and a warehouse for a freight consolidating company.

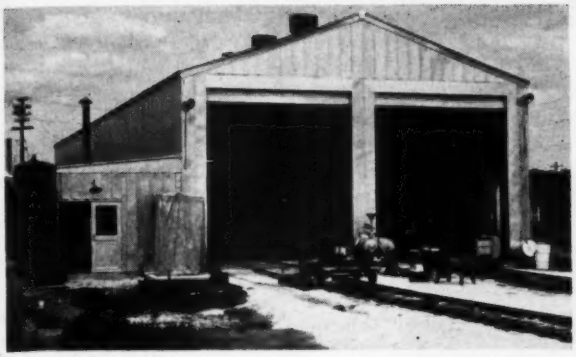
There were, however, differences of opinion regarding which of these advantages should be rated of first importance. As might be expected, economy is a primary consideration on most lines, but several building engineers were inclined to stress the salvageability of such buildings as a top-ranking factor.

According to some engineers of buildings the advantages of having buildings that could be dismantled and taken elsewhere for re-erection took on added significance when the railroads began to use diesel locomotives on a large scale. Heated shelters for these locomotives had to be provided at tie-up points. In deciding on the type of construction to use for these buildings it was necessary to keep in mind the fact that the need for building at a particular point may disappear as a result of changing operating conditions. This consideration, plus other factors, led many railroads to adopt metal buildings for their diesel houses.

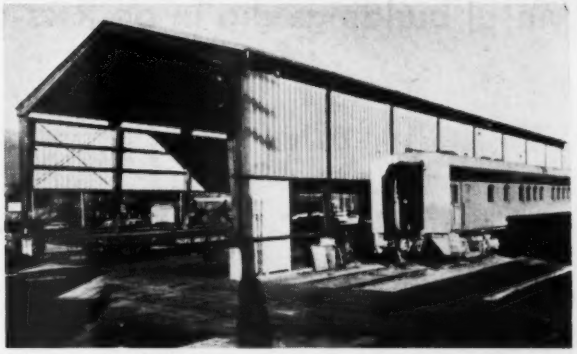
The building engineer of one railroad explained that his company had erected about 35 metal buildings for use as shelters for diesel locomotives. "Already," he said, "as a result of changing conditions we have shifted five or six of these shelters to other locations."

Others tell somewhat the same story. They also point out that the desirability of having buildings that can be salvaged for further use applies to many other types of buildings besides diesel houses.

However, opinion among building engineers regarding the economy of dismantling metal buildings and erecting them elsewhere is by no means unanimous. Those who have doubts regarding the economy of this practice point out that buildings that



Diesel houses . . .



Rip-track shelters . . .

are no longer used must be dismantled anyway. Such arguments were brushed aside by one engineer with the comment that he was taking down metal buildings and putting them up elsewhere for a smaller cash outlay than would be required if new buildings are constructed, and conservation of cash, he went on to say, is of paramount importance today.

When metal buildings are shifted to a new location this engineer is in favor of having the same crew do both the dismantling and the re-erection work. Because the men become familiar with the building when taking it down they can re-erect it without difficulty, he says. If the building is insulated it can be expected, he adds, that some of the insulation will be damaged in dismantling the structure and will have to be replaced. His experience is that this amounts to about 20 per cent of the material.

Maintenance costs

What about the cost of maintaining metal buildings? Most building engineers say that these costs are relatively low. Now that most roads have had such buildings in service for a number of years, they have acquired considerable experience with the maintenance requirements. For example, one engineer said that his road was now faced with the need for painting the galvanized roofs of metal buildings that had been in service for several years.

The practice of one road, as explained by its engineer of buildings, is to coat its metal buildings with aluminum paint. He says it is important to keep these buildings painted, and advocated them at five-year intervals, although money problems in recent years have kept his road from adhering to this schedule.

This same engineer stressed the importance of keeping the side panels of metal buildings off the ground. This distance is a minimum of 8 in on his road. The purpose, he says, is to prevent corrosion and rusting caused by water splashing up from the ground.

Problem of insulation

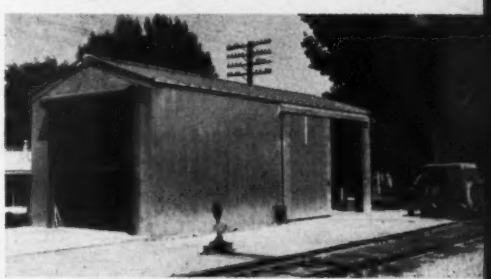
Talk with any railway building engineer or architect for any length of time about metal buildings and the conversation is almost certain to get around to the subject of insulation—the insulation of diesel houses in particular.

An architect explained that when blanket-type insulation is applied directly to the interior surface of the metal siding it acts somewhat like a sponge to soak up water. To overcome this problem the practice on his road is to apply the insulation, which is 1½ in thick, over the ribs of the wall panels. The insulation is then covered with sheet metal which is fastened with screws extending through the insulation into the ribs.

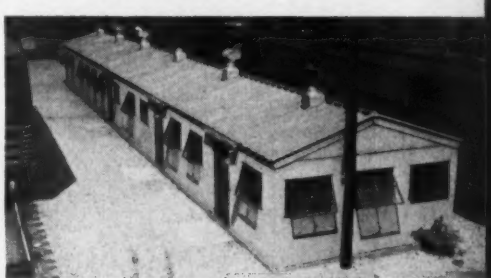
On another road the insulation is applied as follows: Wood furring strips, 1 in by 3 in, are applied horizontally on 16-in centers to the ribs of the metal siding. Rock wool insulation is stapled to the furring strips, and asbestos-cement or galvanized iron sheets are applied over the insulation. In buildings where there is less possibility of damage to the interior walls gypsum wallboard is used to cover the insulation.

Still another road insulates its diesel houses with an aluminum foil vapor barrier covered with wallboard. A wainscotting of corrugated aluminum is provided as protection.

Passenger stations . . .



Motor-car houses . . .



Welfare buildings . . .

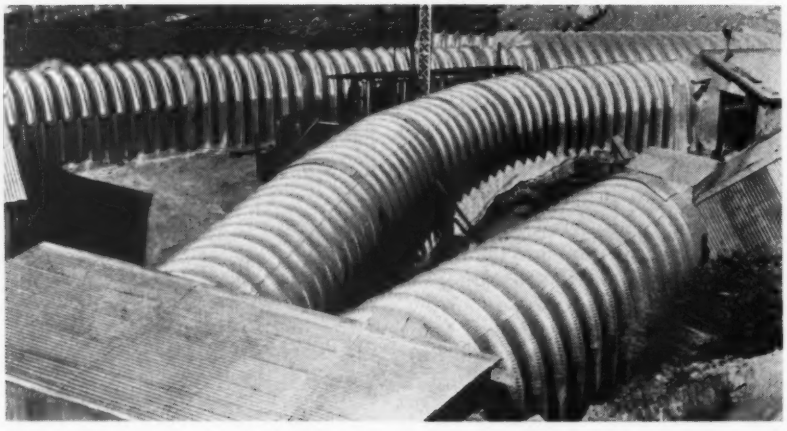
Passenger shelters . . .

Metal buildings dig in on RRs cont'd

FREIGHT STATION (above) is metal building of frameless type. Office has blanket-type insulation behind a knotty-pine finish.

CAR THAWING shed consists of a metal building 276 ft long. Infra-red heating elements are used to thaw cars of frozen ore.

MINE TRACKS (below) are sheltered from falling snow by metal-building structure featuring "double corrugation" design.



To some extent the railroads are using aluminum or Aluminized steel siding and roofing for their metal buildings. In several instances recently one railroad, in asking for bids on metal buildings, while specifying a galvanized roof, has also asked for bids on an aluminum roof. The purpose, explains the engineer of buildings, is to find out whether the cost of the aluminum roofing is coming more nearly into line with galvanized material. The gap between the two, he adds, has been narrowing.

A metal freighthouse, 100 ft wide and 650 ft long, now under construction by a railroad is being provided with a roof of Aluminized steel. It was selected for two reasons: (1) To obtain the reflective qualities of aluminum as a means of helping to keep the building cool during the summer; and (2) to take advantage of the lower cost of maintenance.

Do railroad engineers feel there is a need for additional improvements in metal buildings that would enhance their usefulness, economy and attractiveness for railroad use? About half of the engineers who were interviewed answered "yes" to this question, and then went on to make one or more suggestions.

Here again the subject of insulation came strongly into the picture. Although some manufacturers have introduced insulation in prefabricated panel form, some building engineers are either not aware of this fact or are not satisfied with what is being offered. Several of them mentioned the need for insulated panels. Here's how a chief engineer put it:

"One of the difficulties with these buildings is providing insulation when it is necessary to heat the building. Most of these buildings do not have a prefab insulation panel, and it is necessary to use furring strips to which insulation and finished wall material can be fastened. A definite improvement would be a prefab insulation panel that could easily be fastened to the wall, and in addition provide a finished interior surface. The cost would have to be competitive with present insulation methods.

Wants fender system

Railway engineers have a variety of other suggestions to make to the manufacturers of metal buildings. One chief engineer would like to see "an economical inside fender system of some type, possibly similar to a highway 'flex-beam' guard rail, to protect the lower four feet of sidewalls from mechanical handling equipment; or install a heavy base channel and one girt for attachment of vertical wood fender planks."

Another wants "more effective waterproofing at joints and connections." He would also like to see a "greater variety of component parts and sections to get away from the 'metal building look'."

An architect wants "better catalog details for architects' use, more attractive finishes, and better surface bond for paint adherance."

Yard maintenance can be mechanized

By **F. A. Hess**
Maintenance of Way Engineer
Indiana Harbor Belt—Chicago River & Indiana

Terminal railroads also have had to find ways to accomplish more work with fewer men. Using second-hand material for the most part and fighting for every minute they can have a track out of service, yard maintenance men have had to change from long-standing hand methods to machines for keeping yards operable. The author, firmly convinced that yard maintenance can be mechanized to a high degree, describes the application of machines for these operations.

PRIOR to cribbing out fouled ballast, a crawler crane with clamshell bucket was rented to clean out the intertrack areas.

A MAGNET and generator were mounted on a Speed Swing for picking up scrap and loading it into accompanying truck.

GRAPPLE on Hopto machine recovers usable ties from retired track and stacks them in lots of 12 for banding.

● Practically all track-maintenance operations in yards and terminals can be handled with mechanized equipment. Mechanized gangs can be used for renewing rails and ties, surfacing track, maintaining railroad crossings and renewing turnouts.

A rail-renewal gang, consisting of a foreman with sufficient trackmen, a welder and a welder helper if needed, and a crane operator, can be mechanized. The equipment might consist of Burro crane, Speed Swing or similar equipment, a mechanical spike puller, adzer, bolting machine and spike driver, together with a dump truck or a motor car with push cars. With this equipment and a gang of 13 men, including the foreman, we relay an average of 1,100 ft of rail per day. This includes the distributing and picking up of material.

Making tie renewals

A mechanized tie-renewal gang generally consists of one foreman and necessary trackmen. They are assisted by a Burro crane or Speed Swing, or similar off-track equipment, with an operator and a truck with driver as needed. The equipment consists of a mechanical spike puller, power jack, tie inserter and extruder, a scarifier and broom, a compressor with a one-man spike driver and tamping guns, and a ballasting machine. A motor car and push cars or other equipment are used to distribute the ties and haul away the old ties.

It makes a difference, of course, whether ties are being renewed on the main tracks or yard tracks. Frequently main tracks are outside tracks and are in a slightly elevated position so renewals can be made quite easily by just digging out the shoulder. Along yard tracks, however, the ground is relatively level and calls for extensive digging of trenches in the intertrack space to get the ties in and out. Usually, track jacks or a power jack must be used to cock up one side of the track so the ties can be worked in and out under one rail. In such cases where the number of tie renewals justify it, we mechanize this work by moving in a Spot-Air compressor and substitute cribbing forks for the tamping tools on the tampers to loosen the cemented ballast. We have also used a power discer with broom for this work.

While we have the yard tracks for our renewals, we try to do a complete job by doing a certain amount of surfacing. To the equipment I mentioned, we may add a power jack for use with a spotboard, a compressor with two tamping guns, a Power Ballaster with split crosshead and a hydraulic track liner. The discer with power broom will be brought back and used to clean the track. Because of our limited number

SPEED SWING has proved to be a valuable and versatile machine for the yard forces. It is used for loading, unloading and laying rail, frogs and switches, taking up retired tracks, tie renewals, and the renewal of switch leads and crossings.

Mechanizing yard maintenance cont'd

of men, we'll work a half day on the surfacing work.

The size of the surfacing gang depends on the equipment available. In some cases just a split-head spot-tamping machine is sufficient to raise the low joints and low spots. If extensive work is required, a tamping machine can follow the spot-tamping machine and a lining machine used where required.

Maintaining turnouts

The turnout gang might consist of a foreman and eight trackmen using a compressor with an air drill, a one-man spike driver, an impact wrench, a bolting machine and a one-man portable hydraulic spike puller. The turnout material can be handled by a Burro crane, Speed Swing or a dump truck with a crane mounted on it. A dump truck can be used for delivery of turnout material, and a trailer can be attached to the truck for hauling rail.

Where extensive turnout-renewal work is required, the turnouts can be prefabricated at a cental location and delivered to the site in sections where there is no interference from overhead structures, or the turnouts can be prefabricated adjacent to the site where they are to be used. We have taken out the old turnouts by cutting them in two sections and lifting them out, either with a large crane or by using a bulldozer and an off-track crane or a Speed Swing, and pulling the turnouts out of the way, grading the area with a front-end loader or bulldozer, and placing the new turnouts in two sections, using the same equipment that was used for taking out the old ones.

We have also rehabilitated switching leads by building the new turnouts adjacent to where they were to be used. In two hours time an old turnout could be dismantled and the new one installed. For this work we used the Speed Swing in assembling the material for the new turnouts and a spike driver to fasten them down. Then, after dismantling the old turnout, we used a Speed Swing and a bulldozer to pull the new one in place.

Taking up old tracks

Where an entire track is to be renewed, this can be done by removing the old rails either with a ripper and pulling the remaining spikes in the ties afterwards, or by using a spike puller and then removing the rail. The bolts are removed by burning or with a bolting machine. If the angle bars are frozen to the rails they must be taken off with a wedge and a sledge hammer. After the ties are removed with a fork lift on a tractor or Speed Swing, or with a Hopto machine having a swivel-head grapple, the ballast is removed with a front-end loader, and panel track is laid using a large on or off-track crane of sufficient capacity to handle a section of track.

The ripper is a good piece of equipment for separating the rails from the ties. We have been trying to improve on this device. As it is, it leaves about 25 per cent of the spikes in place. We have been experimenting with this to the end that it will pull all the track spikes. As it is we need a device which will remove all the spikes because, after the rails are torn up, we cannot run an on-track spike puller and there's no off-track machine for doing this work.

The track-retirement gang has a spike puller, power jack, bolting machine, Speed Swing to lift out the rails, load them or set them to one side, and a Hopto machine to load the ties. If the bolts are "frozen," we will use a welder to burn off the nuts and a punch to drive the bolts out.

The Hopto machine shakes the ties free of dirt and stacks them. We have two to four men who work with this machine, two who stack the usable ties in lots of 12 and two who band them. Later, the Hopto machine loads them onto cars for use elsewhere. The scrap ties are given away, stacked and burned or loaded into cars and taken to areas where they can be burned.

The size of the gangs is dependent on the amount of work to be performed, keeping in mind that in yard work two adjacent tracks are generally required to handle rail and tie-renewal work, and that, if possible, the gang should be of such size that either one side of the yard track, both sides, or both sides of two tracks can be completed in one day. I see no necessity for a large gang on turnout work as the operations are generally restricted due to the need for keeping the yard in operation, with perhaps two to three hours time allowed in which to take the lead out of service, permitting the old turnout to be removed and the new one installed. The ballasting and surfacing can be taken care of at a later interval of time.

Has several types of gangs

Our gangs follow a pattern. For instance, on our NYC-IHB-operated territory, we have seven units. We have an inspection and repair gang, comprised of a foreman and 2 trackmen, who use a motor car for getting around to inspect the main tracks, yard leads, make a general inspection of the yards, and take care of minor repairs. Daily reports of these inspections are furnished the track supervisor and maintenance engineer.

We have two gangs which are in charge of yard maintenance. One is comprised of a foreman and 5 track-

men and the other a foreman and 12 employees comprised of machine operators and trackmen. The larger gang covers a more extensive territory. Each is served by a truck and driver as well as a welder and helper whenever he is needed.

Another is a rail-crossing gang which takes care of railroad-crossing maintenance and rehabilitation. It is equipped with a LeRoi Tractair having a 125-psi compressor and is mounted on rubber tires. This unit has a trailer with a tool box and four I-R tampers.

Another consists of a two-man, highway-truck-equipped unit who oil switches, fill switch lamps, service truck equipment with gasoline, diesel oil and lubricants, haul black-top material for repairing highway crossings and place the material.

Another, comprised of a foreman, 7 trackmen and a truck driver, renews turnouts and ties and does surfacing work.

Another is comprised of a foreman and 4 trackmen which takes care of track and turnout retirements.

These forces are supplemented by a timekeeper, 2 welders, a machine operator, a welder laborer, 3 crane operators, 2 bulldozer operators and a truck driver. This makes a total of 56 men engaged in track work.

Our other two territories, the IHB and CR&I, have comparable organizations, their size depending on the extent of their territory.

The amount of equipment to be kept in a territory depends on the extent of the territory, the number of yards, terminals and sidings to be maintained and the volume of work. For instance, I have three different railroad territories and the work is being staggered so we will be doing rail-renewal work in one location, tie renewals in another and turnout renewals in the third location. Our present program is to spend about three months on each of these projects and then rotate the operations. In some instances we will need duplicate equipment and in others only one of a kind.

I like to perform as much work as possible with off-track equipment. For this reason we are working rubber-tired Speed Swings with tongs or magnets, and dump trucks, some with and some without cranes mounted on them, and we travel over yard leads and through the yards, taking tracks out of service as needed.

We are picking up scrap metal using a Speed Swing with magnet and a dump truck. In general, we take two tracks out of service, positioning the Speed Swing on one with the truck running ahead of it. One or two men, depending upon the amount of scrap material, go ahead of the machines and cast scrap to the intertrack space on each side of the track straddled by the Speed Swing. Thus, the machine can cover three tracks at one pass and loads the material onto the truck.

Each year we go over our yards with a track cleaner. Generally we clean three adjacent tracks by windrowing the material from the two outer tracks and the intervening walkways onto the center track, and then loading from this track into a gondola. The car is set on the track by a switch engine, the three tracks are taken out of service and the track cleaner moves the car along as it cleans.

Derailments are a constant problem to the track forces in a yard. Here again the Speed Swing is used for carrying rail and replacing stock rails and switch points. If more rails are involved, a truck towing a long rail carrier is used.

We also have two dump trucks which are equipped with a Pitman Hydra-Lift truck crane. These have 12-ft booms, and are used in connection with pulling rails, and for loading and unloading frogs, switch points and related material in trucks. These are often used also for handling ties, bumping posts and drums of smaller materials.

Our men generally come to a regularly assigned headquarters in their own automobiles. From there they are taken to the job site in trucks.

Because of the cost of owning equipment which may be used only for short periods, we find it greatly advantageous to rent equipment from outside sources. These include dump trucks, large bulldozers, front-end overhead loaders, backhoes, the larger cranes, cribbers, Hopto machines, rock drills, earth augers and occasionally compressors. Normally, this equipment is rented without operators but some must be taken with operators. Renting is a big advantage in industrial areas where such equipment is readily available.

The earth augers are used along a switch lead. We bore holes 22 in. in diameter and about 5 ft deep near the headblocks, then backfill with slag or stone. These capture the drainage, thus keeping our switches free of water and ice. The excess earth is loaded into dump trucks and wasted elsewhere.

TRACK LOWERING for auto-rack traffic was done by shifting rails to form 39-ft track panels. These were lifted out and set to one side, after which roadbed was excavated to desired depth. Procedure was reversed to rebuild track at new grade.

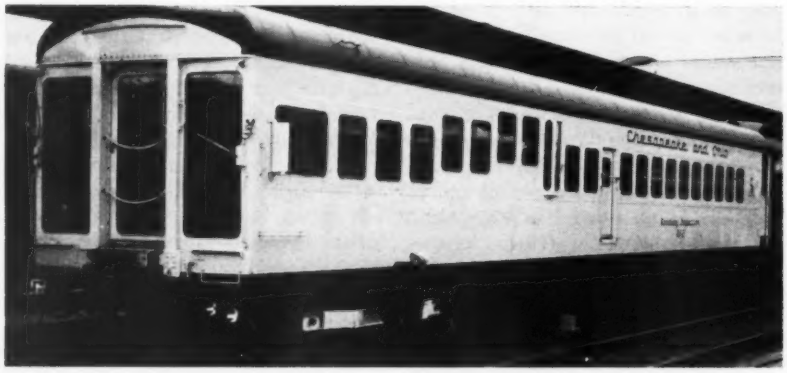
Says new machines needed

"There are several machines which I would like to see developed for use in yard and terminal maintenance. Two are urgently needed. One is a machine to crib out the '6-foot' at the end of a tie so it can be removed and a new one more easily inserted. The other is an off-track machine to crib out between the switch ties of turnouts. Both of these operations require too much time and labor and machines could let us do more of this work in the short time we have the tracks out of service."

C&O recorder car inspects track at speeds up to 100 mph

Other features of new car include missile-type gyroscope and optical recording on light-sensitive paper

OPERATOR sits at instrument console to observe record being made and to indicate landmarks on tape for identification.



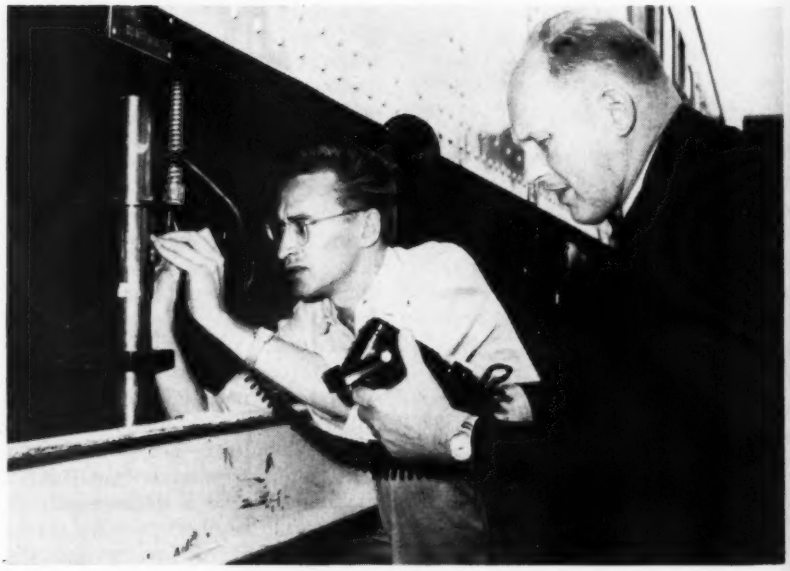
OBSERVATION end of inspection car has window arrangement that permits observers, on sloping seat setup, to have clear view of track. Bay window at center gives operator view of landmarks.

● An electronically equipped track-recorder car capable of making track inspections at speeds up to 100 mph has been placed in service on the Chesapeake & Ohio.

Equipped with a missile-type gyroscope, the car is the only one of its kind in the United States. It will be used primarily to measure and record the condition of rail joints, track surface, elevation on curves and track alinement.

Electronic and electrical equipment in the car was installed by

Equipment under car includes low-joint transducer, gyroscope and lights



REPRESENTATIVES of contractor check out low-joint transducer to see if connections are in order. Device is located on unsprung portion of car truck.

CONTROL center for instruments and recording includes means of communicating with other parts of car. Car will usually be operated as last car on passenger trains.

Measurement Control Devices, a subsidiary of Schaevitz Engineering Company, Pennsauken, N. J. The firm installed a two-axis gyroscope, similar to those used in missiles and aircraft work, under the rear of the car. As the car rolls over the rails at high speeds, the gyroscope receives the impact of the wheels on the rails and transfers impulses to a recording console inside the track-recorder car.

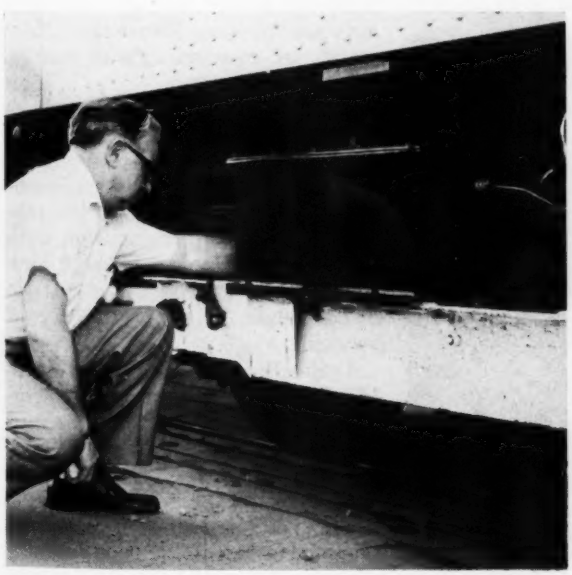
The recording is done optically on light-sensitive paper. When the car passes a milepost or other track landmark, an operator will push a button, making a mark on the chart paper. The milepost number, or other type of landmark, then will be written on the chart so a specific track section or joint can be pinpointed.

Commenting on the car, M. I. Dunn, senior vice president in charge of operations, said it represents the latest advance in C&O's pioneering efforts, begun in 1937, to inspect and measure quality of railroad track in a practical fashion. The car is especially designed to yield accurate measurements of track quality characteristics by passage of the car over tracks at all speeds attained by trains on the railroad.

"Development of this inspection car is directed towards providing efficient and economic quality control of all track on the C&O. Analysis of the track inspection aids substantially in planning maintenance activities both on a short-term and long-term basis. Since this involves expenditures of many millions of dollars each year by C&O, the programming of physical track maintenance and budgeting of funds, which constitute the planning functions, are of major importance."

The inspection car, painted a canary yellow and tagged the "R1-2," will usually be operated as the last car on fast passenger trains. General practice will be to operate it over the road before the start of programmed work and again in the fall to see how track quality has been bettered by the maintenance program. The spring inspection will also reveal what damage winter has done to the track.

Mr. Dunn pointed out that since the roadway inspection car is an information-processing device, it also possesses the capabilities of serving as a research vehicle. In addition to electronic devices, the car also has facilities for visual observation of track by local and system railroad officials.



LEFT—Housing for gyroscope is also mounted on unsprung portion of car truck. ABOVE—Lights are mounted below floor of car to illuminate track at night and in tunnels. Adjustable light can be manipulated from inside of car while it is in motion.

Pedestals carried track during

1 After the old track had been removed pedestals were placed and positioned with aid of a template and plumb bob.

2 Rails for new track were placed on pedestals, and shims were used to bring rails to correct elevation.

Subway track has concrete roadbed

The New York City Transit Authority plans to put an automated subway train in service later this year on its Times Square-Grand Central shuttle line. For the use of the train one of the shuttle-line tracks has been replaced with a track of special design. The rails are placed on rubber tie pads and are bolted directly to a permanent concrete roadbed. Joints are "frozen" by a "glued-joint" process.

NEW TRACK as it appeared after concrete forms had been removed. Remaining steps include final clean-up and application of protective cover to third rail at left.

● New York City Transit Authority's Times Square-Grand Central shuttle service is high-density railroading. Connecting two north and south subway lines, the shuttle service has a heavy flow of passengers in both directions, not only at rush hours but at almost any hour of the day or night.

The 2,600-ft shuttle line consists of four tracks. Trains are operated from one end to the other and back without turning. Normally, three tracks are in service, with one reserved for storage.

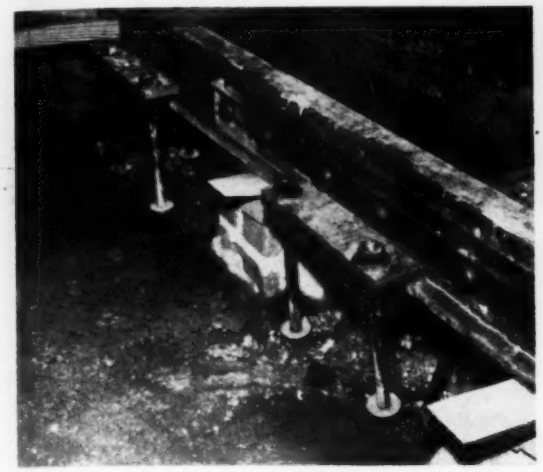
When the decision was made to replace the conventional ballasted track of Track 4 with a new design, Transit Authority's maintenance-of-way engineers were faced with the problem of performing the work with a minimum disruption of service. Traffic would continue on two tracks while Track 4 was out of service.

Under the over-all supervision of W. L. Schlager, Jr., assistant general superintendent, maintenance of way, work was begun in May. Completion date was set for the early part of June.

The new design—in which rails mounted on rubber tie pads are bolt-

construction of new roadbed

3 Rubber tie plates, each fitted with four bolts and a fibre plate on top, were hung from rail bases.



4 Forms for concrete roadbed are placed. Transit-mixed concrete was chuted through manholes into buggies.

rubber tie plates, 'glued' joints

ed directly to the permanent concrete roadbed—was chosen with two objectives in mind. One is to provide as smooth a ride as possible for a projected automatically operated subway train and its electronic control equipment and the other is to reduce maintenance costs to a minimum.

The existing track is laid on the permanent concrete foundation of the shuttle tunnel. The work of constructing the new track was progressed in 600-ft sections.

How track was built

Lengths of new 100-lb ARA-B rail were brought in and unloaded where they were to be used. The old track was then dismantled. A special car with a 40-ft extension boom was used for loading the rail. Ties were picked up and loaded on a work train on Track 2. (Track 2, which does not have platform facilities for passengers, had to be used for the work train, while Track 3, which lies between Track 2 and Track 4, was kept in service.)

With the rail and ties removed, a front-end loader was brought in to clean out the ballast. As each of the 600-ft sections was cleaned in turn, concrete pedestals for supporting the rail while the concrete roadbed was being built were brought in and put in place. The new rail was placed on the concrete pedestals and then blocked and shimmed in place.

Rubber tie plates, manufactured by Railroad Rubber Products Company to Mr. Schlager's specifications, were applied to the base of the rail at the rate of 14 to each 39-ft rail length. These pads are 1 ft by 8½ in by 1⅞ in. in size and have double shoulders that lap over the top of the rail base. Four ¾-in bolts, 11 in long, were inserted through each tie plate with the heads bearing against a fibre plate placed on top of the rubber.

Placing the concrete

With the tie-plate-and-bolt assemblies in place on the rail bases, and with the rails shimmed in position, work could proceed on the construction of forms for the concrete roadbed. These were required mainly to make provision for a gutter, 4 in deep and 2 ft 3⅝ in wide, between the rails. Concrete was delivered in transit-mix trucks to manhole locations where it could be chuted down into buggies operating on the track being constructed. The concrete was placed up to the bottoms of the rubber tie plates, thus giving the roadbed a depth of about 8 in. The width is about 9 ft.

When the concrete had set and the track had been cleaned up, the rail joints were "frozen," using Rail Joint Company's process and Bondarc bonding material. The joints are square.

The new type of track, says J. J. Quinn, superintendent of track and structures of the Transit Authority, is also applicable to other sections of the subway. If it proves successful, the design will be used to replace other sections of conventionally ballasted track.

The Transit Authority has had another type of rubber-mounted rail in service on another shuttle track for almost two years. This, a 160-ft section, differs from the current installation in that it was constructed with steel channel sections extending between the piers, while the present installation does not. The first section has worked very well, Mr. Quinn reports.

SECTIONS of plastic pipe were welded together to enable the largest size of pipe possible to be used. Heat is furnished by electricity or a combustible gas.

PVC PIPE was threaded through old water line from one end until hydrant connection was reached.

Plastic pipe saves failing metal water line

● How can a water line be replaced without digging up the old pipe? This question recently faced the Pennsylvania at its passenger station in Pittsburgh, Pa. The 3-in and 4-in cold water lines serving the facility were failing due to electrolysis. Officers of the road didn't want to dig up the station yard and platforms to replace the pipes so a search was undertaken to find an alternative measure.

The answer was found in the form of a rigid plastic pipe manufactured by the A. M. Byers Company. Known as PVC pipe, it is made from thermoplastic polyvinyl chloride. The procedure followed was to thread 2-in and 3-in PVC pipe through the old water lines from one end until the connection to a hydrant located in the yard was reached. Five-foot sections were used due to limited working room at the inserting end. The joints between adjacent sections were welded (see accompanying description) to permit the largest diameter of pipe possible to be used.

Byers PVC pipe is manufactured in two types, Type I—normal impact and Type II—high impact. The first type is compounded from pure polyvinyl chloride resin mixed with minimum quantities of lubricants and stabilizers to permit processing. Type II contains the same materials plus a synthetic rubber modifier to provide higher impact resistance over normal temperature ranges. Since Type I has a recommended working pressure greater than the 100-psi operating pressure of the existing lines pipe of this type was used on the PRR job. However, before being specified for the job at Pittsburgh the pipe was tested in the road's Altoona laboratories.

The immunity of PVC pipe to electrolysis was the main consideration leading to its use at Pittsburgh, according to PRR engineers. "The Pennsylvania Railroad," said one engineer, "has long been concerned with the limited service life of metal pipelines in electrified environments. We feel we've found the answer to a costly replacement problem."

At the Pittsburgh station, smaller diameter PVC pipe is in effect doing the same job that larger-size metal pipe did before its failure. This is primarily due to the glass-like surface of the pipe, which is claimed to reduce flow resistance to about half that of steel pipe.

How PVC pipe is welded

PVC pipe can be readily welded using a welding gun and PVC welding rods. In general, two types of welding guns are available. One type is electrical and utilizes resistance elements which heat air or gas flowing over them. Compressed air is usually used, although inert gases, such as nitrogen, helium or argon, can also be employed. The other type of gun utilizes a combustible gas, such as hydrogen or acetylene, to heat a metal coil carrying air.

Proper temperatures for welding polyvinyl chloride range from 450 to 550 deg F, which are sufficient to reduce the material to the semi-melted state.

The welding process is started at the root of the joint between the beveled ends of the pipes. The tip of the rod and the edges of the pipes are heated simultaneously until the rod fuses with the ends of the pipes. Heat is steadily maintained during the welding process by alternately moving the hot air over the materials. As each pass is made care must be taken to fuse each succeeding bead to the previous beads and to the edge of the pipe.

When welding pipe, the welder's hand describes a complete circle around the pipe with the rod pointed toward the center. If this procedure is not followed, a stretched, stressed bead might result. This condition, if severe, could cause the bead to separate when the next pass is made.

It is reported that welds can be produced which equal the ultimate strength of polyvinyl chloride in tension. Generally, however, commercial welds made by experienced welders range between 80 and 90 per cent of ultimate strength.

PASSENGER vehicles reach the new facility over a tree-lined double-lane paved drive. Freight trucks use a separate driveway.

New Station: Showcase for ACL

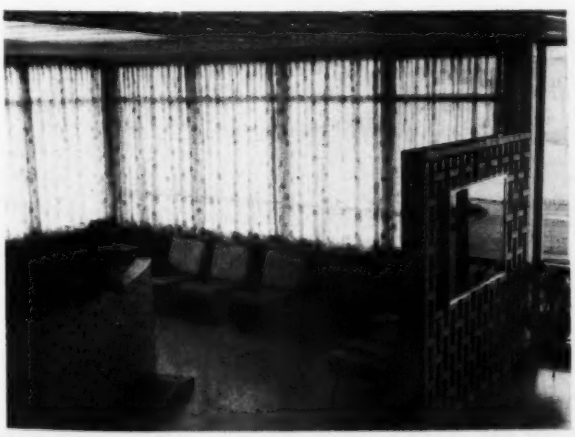
● Residents of Lakeland, Fla., are proud of their new "million-dollar" combination freight and passenger station, recently built by the Atlantic Coast Line. The setting and architecture are typically Floridian.

The main approach is a double-lane drive flanked by palm trees. Mercury-vapor lighting on high standards was provided along a center planting strip. Trucks use a separate paved driveway.

The building, 450 ft long by about 50 ft wide, has low sweeping lines. The two-story northerly portion houses passenger facilities on the ground level and offices on the second floor. The southerly portion contains freight-handling facilities. A decorative grille provides shade for large areas of fenestration.

The freight station is the Coast Line's central dispatching point for its over-the-road trucks. Six tailboard spottings were provided for these vehicles. Two tracks serving the facility permit 12 cars to be loaded and unloaded simultaneously.

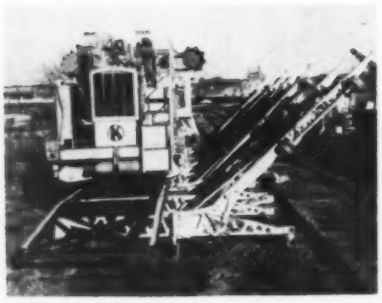
COVERED PATIO at north end of passenger station is of graceful design and has two holes in the upswept roof to permit palm trees to project through. Second floor has offices for a trainmaster, roadway employees and local traffic department.



INTERIOR of waiting room is air conditioned and is protected from the sun by draperies and wide eaves. Decorative features include an open-mesh brick partition with train bulletin board and a terrazzo-tile bench planter.

SHELTER over passenger-loading platform has a thin-shell precast-concrete roof. This was cast on the job before being set on the concrete columns. The latter serve as downspouts for passing the roof drainage to an underground collection system.

PRODUCTS



Hydraulic operation for . . .

Multiple setoff

A SELF-PROPELLED, hydraulically operated setoff is available which can be lengthened to accommodate all the machines in a track gang. Known as the Kershaw multiple setoff, the unit consists of a double-ended ramp which moves transversely on the carriage to remove the machines from the track. The carriage then is raised hydraulically to a vertical position to clear the track. Adjustable pedestals are provided for leveling the setoff outside the track. The setoff can be lengthened by adding any number of standard units to accommodate as many machines as required. Each unit is attached to the adjacent unit by means of pins and quick-connecting hydraulic fittings. *Kershaw Manufacturing Company, Dept. RTS, 2205 West Fairview Ave., Montgomery 1, Ala.*

(Circle 200 on TIME-SAVER card, page 51)

Front end loader for . . .

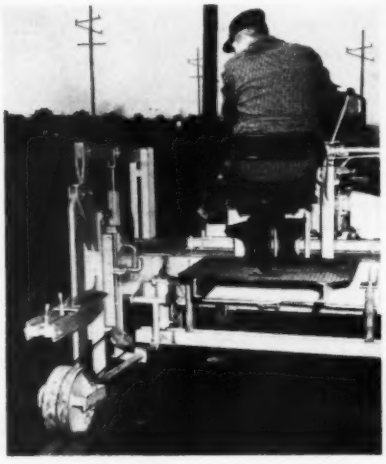
Hi-Lifter

THE KWIK-MIX Hi-Lifter can now be equipped with a 1¼-cu yd capacity front-end loader attachment. The new unit has an 8,500-lb maximum lifting capacity, a 9,000-lb breakout force, an 8-ft 6-in dumping height and a 40-deg bucket roll back at ground level and 50-deg roll back at dumping height. It digs a 94-in wide hole.

The new unit is designed so that the entire front-end operating mechanism pivots ahead of the operator. This arrangement is stated to provide unlimited visibility for the operator when spotting and controlling the bucket and a high degree of safety for the operator.

In addition to the front-end loader attachment, the Hi-Lifter can be equipped with a standard fork lift capable of lifting 4,000 lb to a height of 22 ft 6 in, a pallet fork capable of lifting 3,000 lb to a height of 35 ft, vertical clamp arms for stacked lumber, crane hook, material transfer bucket and two sizes of concrete hoppers. *Kwik-Mix Company, Division of Koehring Company, Dept. RTS, 235 West Grand Ave., Port Washington, Wis.*

(Circle 201 on TIME-SAVER card, page 51)



Automatic indicator for . . .

Tie spacer

AN INDICATING DEVICE has been developed for the Pullman-Standard Tie Spacer which is claimed to enable the operator to precisely space ties without the rail being marked in advance. It consists of a belt-driven indicator pulley which is turned by a small wheel that operates on the rail. The diameters of the pulley and wheel are designed so that one-half a revolution of the pulley is equivalent to 19½ in of horizontal movement. By lining up a mark on the indicator pulley with a pointer on the indicator frame the operator can know when the center of the tie being moved is 19½ in from the center of the adjacent tie. The device can be adjusted to meet different standards for tie-spacing. The indicator assembly pivots up onto the deck of the tie spacer for traveling. *Distributed by: Matisa Equipment Corporation, Dept. RTS, 1020 Washington Ave., Chicago Heights, Ill.*

(Circle 202 on TIME-SAVER card, page 51)

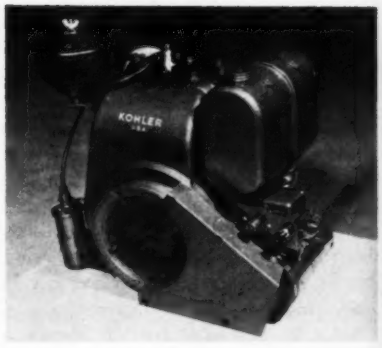
•

For 60 to 140-lb rails . . .

Cushioned car stop

BALLAST in front of two ties is used by the Nolan Model CCS-1 cushioned car stop to stop moving cars safely and quickly. The force of the cars is transferred to the ties through arms which extend from the wheel contact plate to the side of the ties. The shape of the plate has been designed so that no overturning force exists. The Model CCS-1 is a welded steel unit which can be used on 60 to 140-lb rails. Weight of each pair is 340 lb. *The Nolan Company, Dept. RTS, Bowerston, Ohio.*

(Circle 203 on TIME-SAVER card, page 51)



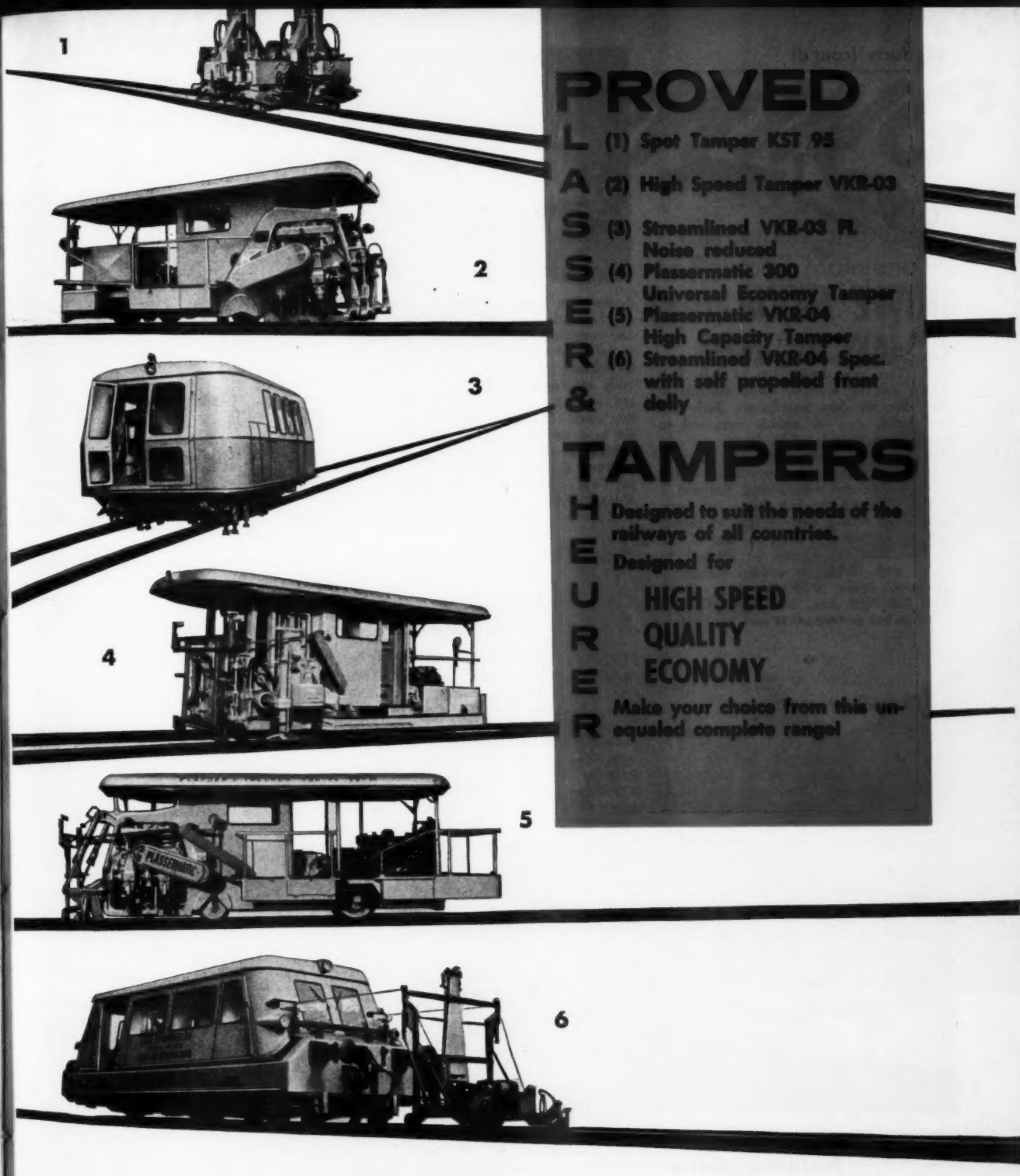
Electric starter for . . .

Air-cooled engine

THE KOHLER 9.5-hp Model K241 air-cooled engine now is available in a model that is equipped with an electric starter. Known as the Model K241S, the new engine includes a 12-v combination starter-generator, a battery-charging current regulator and a control panel which has the ignition switch and starter button. It also is available with either magneto or coil ignition. The K241 is powered by a 1-cylinder, 4-cycle, cast-iron engine. Features claimed for the unit include anti-friction ball bearings on the crankshaft, spark advance mechanism, oil-bath air cleaner and fuel pump. *Kohler Company, Dept. RTS, Kohler, Wis.*

(Circle 204 on TIME-SAVER card, page 51)

(*Please turn to page 40*)



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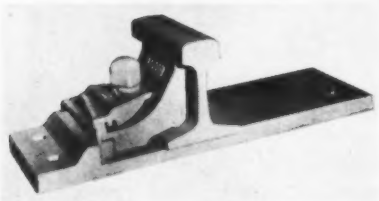

New one-bolt version for . . .

Rail brace

THE RACOR Security adjustable rail brace now is available in a one-bolt version. The new brace has a 1-in bolt which can be inserted from the top of the plate for easy installation. Both bolt and brace can be readily removed to replace stock rails. The brace can be adjusted by loosening the nut with a standard track wrench, driving the wedge to proper fit and retightening the nut.

The standard two-bolt brace has been redesigned with a slotted plate to permit bolts to be installed from the top of the plate. Either brace can be applied to plates with forged or welded shoulders. *American Brake Shoe Company, Dept. RTS, 530 Fifth Ave., New York 36.*

(Circle 205 on TIME-SAVER card, page 51)

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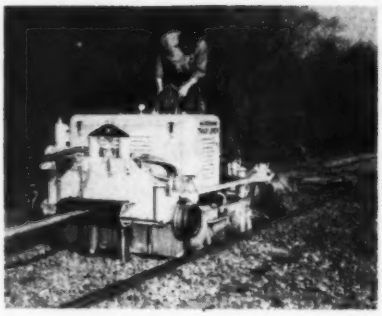
Bumps track into position . . .

Track liner

OPERATED by one man, the new Kershaw track liner uses weights, moved by hydraulic cylinders, to bump the track into the desired position. The unit is



designed to operate without clamping it to the rails and to line track quickly and smoothly without humping. Complete visibility along the rails can be obtained by folding the flanged wheels against the body of the machine. These wheels also are used to remove the machine from the track. The manufacturer states that the new machine may be used with any sighting device for lining track into final position. *Kershaw Manufacturing Company, Dept. RTS, 2205 West Fairview Ave., Montgomery 1, Ala.*

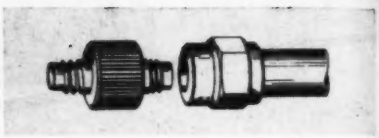
(Circle 206 on TIME-SAVER card, page 51)

●

New reversible nozzle for . . .

Marking gun

THE NEL-SPOT marking gun now is equipped with a nozzle which can be reversed by merely unscrewing it from a new retaining sleeve. The new nozzle, designated HW-59, has a large knurled portion in the center and screws into the outer end of the new retaining sleeve, designed HW-61. With the old nozzle it was necessary to remove the retaining sleeve before the small nozzle could be



reversed. Both nozzle and sleeve are standard on all new marking guns and will fit all old guns. *The Nelson Paint Company, Dept. RTS, Iron Mountain, Mich.*

(Circle 207 on TIME-SAVER card, page 51)

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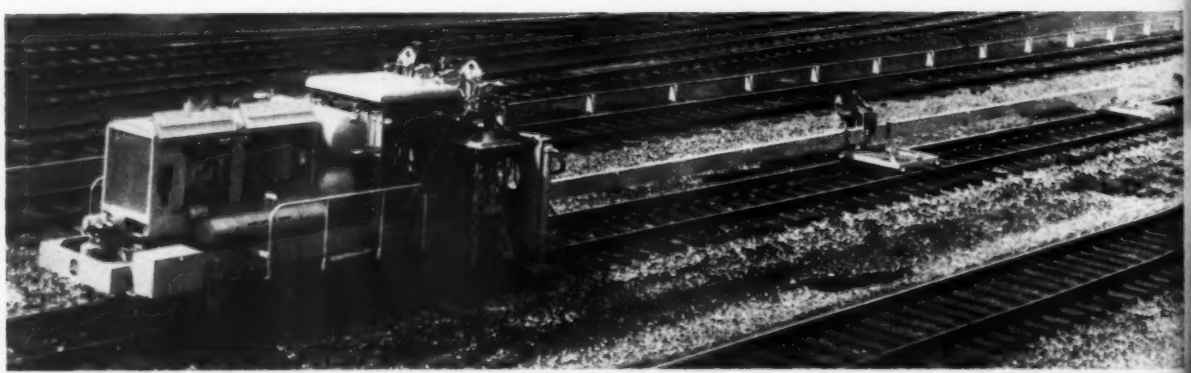
For high-pressure hoses . . .

New fittings

DESIGNED for use with Aeroquip 1509 multiple-wire-braid high-pressure hose, the new Iron Mike fittings consist of three components for quick, easy, foolproof assembly. The three components are: A steel nipple, without threads, which fits into the hose and does not cut the inner tube; two aluminum segments which grip the hose reinforcement securely and mate with the nipple for correct positioning; and a tapered steel socket which is pressed over the segments to form a compression fitting. The fittings are available for hoses ranging in size from ¾ to 2 in inside diameter. They are claimed to be suitable for a wide range of operating temperatures.

The units are recommended by the manufacturer for high-pressure hydraulic and pneumatic lines and for fuel and lubrication systems. The tapered sockets and aluminum segments are standard parts whereas the nipple is made in ten different end styles, including male-pipe, swivel and male-flare fittings. *Aeroquip Corporation, Dept. RTS, Jackson, Mich.*

(Circle 208 on TIME-SAVER card, page 51)



Controlled by a computer . . .

Surfacing device

DEVELOPMENT of a new computer-controlled technique for surfacing track has been announced. The equipment used is known as the RMC electronic surfacing device. It utilizes a jack tamper, two carts pushed ahead of the tamper, which serve as forward reference points, two 34-ft aluminum beams supported on the carts, a potentiometer, computer and other equipment for evaluating track surface and a direct-reading meter in the cab of the jack tamper.

As the jack tamper moves along the track the electronic measuring devices automatically determine which of the two reference points is at the higher elevation. The computer automatically selects the higher point and establishes a reference to it, indicating on the meter the change in grade required. The operator then jacks the grade rail until the needle of the meter is centered. The opposite rail is jacked to proper cross level as indicated by a separate meter. One tie at the jacking point then is tamped to hold the raise until the track is finish tamped by one or more tampers following the jack tamper. The manufacturer states that only one operator is required for the complete raising and leveling process. A completely automatic system also is available which eliminates the need for the operator to refer to the meter and provides for automatic control of the jacking operation, including cross level. *Railway Maintenance Corporation, Dept. RTS, Pittsburgh 30, Pa.*

(Circle 209 on TIME-SAVER card, page 51)

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Developed and Built
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180° BOOM SWING
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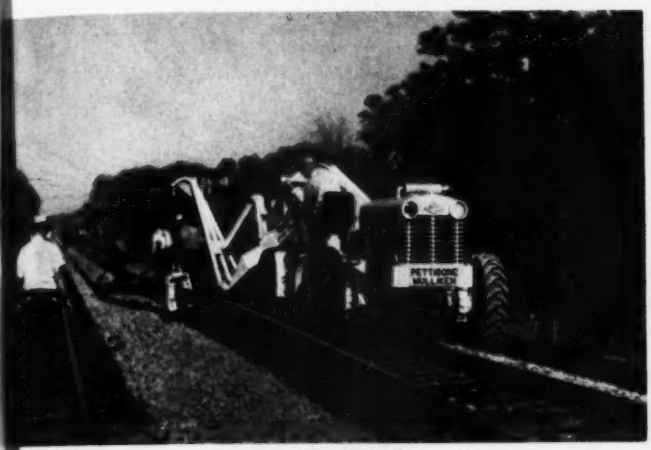
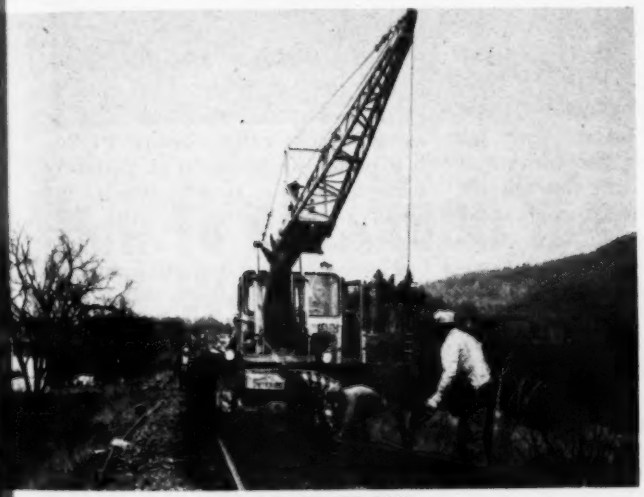
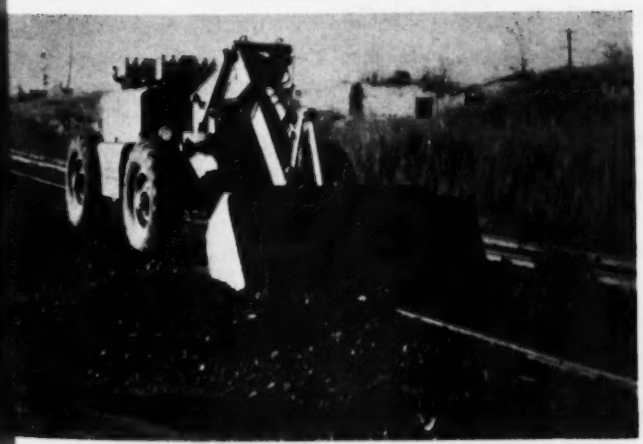


LAYING WELDED RAIL



LAYING STANDARD RAIL



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- Back Hoe
- Clamshell
- Back Filler Blade
- Pull Drag Bucket
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WHAT'S THE ANSWER?

Use of run-through switch stands

What factors determine the use of switch stands of the type which permits switches to be run through? Explain. Do such stands encourage switch crews to run through switches having conventional stands? Explain.

Wants all run-throughs

By J. F. Warrenfells
Chief Engineer
Jacksonville Terminal
Jacksonville, Fla.

It is my opinion that only primary factors are involved in the use of run-through switch stands. First, will the switch stand give safe, economical service? Second, will the stand be used in a location to best facilitate train movements?

There are innumerable secondary considerations, some of which are purely technical, and involve the manufacturer. Others have to do with human faults involving proper training and supervision of the train crews.

For example, we have approximately 125 run-through stands in service. I find that so long as we enforce the rule that stipulates "moves must be completed before backing up," we have no operating troubles. This ruling was made because we found, on several occasions, that the switch stand will hang "on center" and, when the move is reversed, vibration will cause the stand to flip back to its original position, causing derailments. This is by far the greatest source of trouble.

Of the 125 such stands we have in service, only 27 are painted white, which designates them as run-through switch stands. It is no secret that the other 98 get such treatment at one time or another. We have trouble only when the train crew fails to observe the type of stand and damages the conventional type.

I believe this answers your last question concerning the encouragement of crews to run through the conventional stands. Although I will agree that we sort of have them outnumbered, we have only ourselves to blame for this. Frankly, I am about to conclude that in our particular case we should replace all of the conventional stands with the run-through type, which would involve 75 more stands.

Result in savings

By Hugh Hazelton, Jr.
Railroad Products Division
American Brake Shoe
Chicago

The principle of the "safety" switch stand, which permits a switch to be run through without damage, is not new. But, as labor and material costs have increased, such switch stands have become more and more widely used. In addition, the design of the safety switch stand has been improved in one model to the point where it is suitable for fully automatic operation.

The man in the field is the best judge as to the locations where such stands should be used. In general, they should be installed at switches which have been or are likely to be run through. The most frequently used yard switches fall in this category. On active ladder tracks, it is preferable to equip all switches with automatic switch stands, to avoid mixing automatic with the rigid types.

The economies derived from the use of automatic switch stands are well known to the railroads that have installed them. These include the elimination of labor costs for the repair of damaged switches—particularly overtime; the elimination of

NEW QUESTIONS to be answered in October

Do you have an answer to any of the questions listed below? If so, send it in. Payment—based upon substance and length—will be made for each published answer. If you wish your name withheld, we'll gladly comply.

DEADLINE: August 31

• 1. While walking behind hydraulic track machines, fresh drops and trickles of oil will sometimes be observed on the ties. Is this loss of hydraulic fluid normal? If not, what should be done? Explain. How often should the fluid level be checked on a hydraulic machine?

• 2. When programming B&B work on a terminal for the year ahead, to what extent is it possible to make provision for emergency work and the many special requests made by shippers and officers of other departments? Explain.

• 3. Frequently when taking up track which has not been used for years, joint bars will be found to be rusted solidly to the rails. How can such bars be removed? Explain. What is the best way to remove badly rusted nuts and bolts?

• 4. What is the best way to keep bridge ties on an open-deck bridge evenly spaced and from bunching in the event of a derailment? Describe in detail.

• 5. Signal maintainers complain that the use of a track broom sometimes causes the cribs to be filled with ballast to the tops of ties and causes shunting. Do you agree? How can full cribs be avoided? Explain.

Send answers to:

What's the Answer Editor
Railway Track & Structures
79 West Monroe Street
Chicago 3, Illinois

Do you have a question you'd like to have answered in these columns? If so, please send it in.

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Piling old ties to be destroyed
Stacking usable ties to be banded
Handling bridge timbers
Maintaining inside tracks

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POWER TRANSMISSION: Hydraulic.
TRAVEL SPEED: 7½ to 15 M.P.H.
TRANSMISSION: 2-speed selective type.
ROTATING DECK: 360°.
TONGS: Rotate 260°.
TONG OPENING RANGE: 5" to 16½".
BOOM: Box type—17' standard length, from Center Pin.
BOOM: 5' or 7' intermediate section—optional—Extra charge.
BOOM: Travel—60° with boom parallel to track, 30° in either direction, up or down.
TRANSVERSE SET-OFF WHEELS: Optional—Extra charge.
CLEARANCE: Height—72". Width 65".
SWING: 6' 2" (measured from center pin).
WHEEL BASE: 60".
OVERALL LENGTH: 10' 8".
WEIGHT: Approximately 7000 lbs.

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material costs for the repair or replacement of damaged switch points, switch rods and switch stands; and the elimination of derailments and resultant delays in yard operation.

An additional saving in time and labor has been obtained by some railroads where switch-engine crews have been permitted to run through switches equipped with automatic switch stands. This elimininates the necessity for the locomotive to stop while the switch is being thrown and speeds up the entire yard operation. Automatic switch stands to be used in this manner are usually painted yellow or otherwise marked to facilitate identification. Where local rules allow switches equipped with automatic switch stands to be run through, it is desirable that all switches in a given yard be so equipped. This will prevent the accidental running through of a switch operated by a rigid-type switch stand.

The proper use of automatic switch stands requires education of engine crews and supervision by operating officers. This is a small price to pay for the savings that can be obtained by the reduction in operating and maintenance costs.

Fireproofing open-deck timber trestles

Some roads fireproof the decks of open-deck timber trestles by applying sheet metal. What are the advantages and disadvantages of this practice? Is the application of bituminous coating with embedded screenings preferable? Explain.

Likes bitumens

By J. R. Coates
Assistant Bridge Supervisor
New Orleans Public Belt
New Orleans, La.

The advantages of sheet metal as fire protection on timber-decked bridges is far outweighed by the disadvantages if one will take into consideration the problems of bridge maintenance. It can be said, in favor of metal, that it provides better fire protection, is neater in appearance, and is easier to walk on. But, with the dieselization of the American railroads in the last decade, the probability of fire has been greatly reduced. Therefore, the first advantage of metal is unnecessary, and neatness and walking comfort need not enter into the picture.

Now let's take into consideration the disadvantages of sheet metal coverings. First, the inspection of ties and fastenings is an impossibility unless the sheet metal is removed. In this event, there is damage to the metal and its fastenings, not to mention the high cost of the labor involved.

Second, unless the fastenings of the sheet metal are constantly maintained, it becomes loose and the danger of being caught by bottom rods of passing cars is one that must be kept in mind at all times. One can easily visualize the damage, not only to the bridge and its fire protection, but also to the rolling stock and the possibility of a major wreck.

Third, unless the utmost care is taken to provide adequate insulation, shorts will occur in the track circuits.

Fourth, dampness is trapped beneath the metal, which encourages decay in the ties. Also, the ventilation of the structure is hindered, thereby preventing the drying out of the ties and timbers after heavy rains or during extremely humid weather.

Last, when ties are replaced, the sheet metal must be removed and replaced.

The application of bituminous coatings, or tie-sealing compounds furnished by the petroleum industry, with an embedment of pea gravel or screenings is preferable for the following reasons: The initial cost of the material is much lower, it may be mopped on or sprayed as the user chooses, skilled labor is not required, and expensive tools and equipment are unnecessary.

The coating affords protection from the weather, sealing cracks and crevices in the timber, blocking out the decay-causing moisture. The entire tie structure is open to inspection at any time, and ties may be replaced without the necessity of removing the metal. The structure is open and ventilated, permitting the rapid evaporation of dew and moisture, and further preventing decay.

The use of pea gravel or screenings is left to the discretion of the user, and may be predicated on the availability of materials. We have used pea gravel, unscreened sharp sand containing small pebbles, and screenings from our sand-blast sand supplier that are too large for blasting nozzles. All have their advantages, and the availability of materials determines which will be used.

On steel structures, where the ties bear directly on the tops of the stringer girders, maintenance of these girder tops is easily accomplished from the deck, working down between the ties, a feat that would be impossible if the sheet metal is applied.

Has under-deck fires

By E. C. Hogel
B&B Supervisor
Union Pacific
North Platte, Neb.

All of the open-deck pile trestle bridges on my territory have galvanized fire decking as fire protection. These bridges were all built during the time when we had coal-burning engines which were a definite fire hazard in certain localities. With galvanized fire decking we have had a few fires, but none from equipment. The fires we had were due to some ditch company or section forces burning the weeds and the fires getting out of control. When a fire gets started under the fire decking it is impossible to put it out.

I think the application of bituminous coating with imbedded screenings is the most feasible way to protect piling and timbers from fire. Due to all power being diesel we do not have the danger of fires from equipment.

Pile-trestle replacements on my

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WOOLERY
TRACK TOOL TRANSPORTER

Handy, light-weight push car saves men, muscles, and time for the important job!

Weighs only 160 lbs.—yet will carry a thousand pounds of tools or materials! This is due to the novel steel-reinforced weather-proof plywood deck construction. *Light—but amazingly strong!* Can be set up or dismantled in *less than a minute* for easy loading into a truck, bus or motor car.

Deck—4' by 5' weather-proof plywood and corrugated steel construction.

Here is a handy, light-weight push car; carries tools to the job site from the nearest crossing or other point where truck or bus must stop. *Men arrive fresh and ready for work having been spared the laborious job of toting hundreds of pounds of tools and equipment!*
Rolls easily on anti-friction bearings even when fully loaded. Handle quickly reversed pushing in either direction.

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What's the answer? (cont'd)

territory within the past five years have all been steel "H" piling with ballasted decks, or open decks with asphalt-asbestos fire-retardant materials and gravel applied for fire protection.

This year on our steel trestles we are using creosoted treated decks with the Arban additive.

Need all protection

By R. C. Cox
Assistant General B&B Supervisor
Western Pacific
Sacramento, Calif.

On our railroad it is of vital importance that our bridges be protected from hot metal from brake shoes, flying sparks from grass and forest fires, cigarettes, etc.

Our railroad operates over tracks through valleys, mountains and desert, all of which have fire hazards of a different nature.

In the valleys where we have a heavy growth of weeds and grass which dries early in the summer, it is important that adequate fire guards be maintained under and on both sides of the bridge and that both pile and frame bents be treated with a fire-retardant substance. We on the Western Pacific have experimented with many different products which have given us varying results.

The decks of these bridges must also be protected against fire by pressure treatment or the application of fire-retardant paints which we cover with "birds-eye" crushed rock. This method has been a very effective means of protection. In fact, we have never had a fire on a bridge deck which had metal fire shields on the tops of caps and stringers and rock chips on the tops of the ties and guard rails.

In the mountains, where the majority of our bridges are steel spans, the hazard is chiefly from sparks and flying embers from forest fires, cigarettes dropped by hunters and fishermen and hot metal from brake shoes, it is important that the sides of the ties be protected over the bearings as well as the tops.

In the desert the danger is the same as in the valleys except that tumbleweeds and other dead weeds pile against the bridges. Because of this, the sides and bottoms of the caps and stringers must be considered and protected.

We are now using Arban additive to the creosote-pressure treatment on all of the bridge timbers. There is one objection to this treatment that must be kept in mind: Until the timbers are dry they are highly flammable.

My personal opinion is that metal fire shields on tops of caps and stringers and a heavy fire-retardant mastic coating with imbedded rock chips give the best protection.

How to avoid overturning cranes

Since cranes of various capacities are sometimes used by field forces not entirely familiar with their capabilities, what measures should be taken to be sure that the machines are not overturned? Who is made responsible? Explain.

Cites five rules

By S. E. Holzhauser
Roadmaster
Missouri-Kansas-Texas Lines
Clinton, Mo.

First, you must have a good operator. A good operator will become familiar with the machine, will know what he can do with it, and will see danger before it happens.

Second, an experienced ground crew is essential for making the right hook up and for providing adequate cribbing and blocking when necessary.

Third, a reliable man should be designated to watch only the machine when it is lifting or moving. This man should be ready to notify the operator at once of any possible danger.

Fourth, in case the supervisor or foreman in charge should give instructions to the operator for a movement which the operator believes to be unsafe, then the operator should talk it over with the supervisor and both agree on a safe movement.

Fifth, it's my opinion that the responsibility for the safe handling of cranes rests in the hands of the operator.

Have stenciled capacities

By J. F. Warrenfells
Chief Engineer
Jacksonville Terminal
Jacksonville, Fla.

It should be the responsibility of the department head to see that all cranes have plates showing the proper capacity of the cranes before delivery. This plate should be fastened or stenciled on the boom where the load is supported. In the case of a changing radius, the maximum load at maximum working radius would be used. It should then be the responsibility of the supervisor to familiarize himself thoroughly with the use and capacity of the crane at all working radii, after which he can advise the operator on whose shoulders the final responsibility lies.

Experiment first

By H. Remy
Roadmaster
Kansas City Southern
Many, La.

Before attempting to use a crane with which he is not familiar, the operator should try it out without any load, working both the load lever and the swing lever. He should also try out the brakes on the load and swing.

Since most cranes have a booklet or a plate on them showing the capacity of the crane at various radii, the operator and the foreman should familiarize themselves with this information. Normally, this will show the various specified loads at the radii without the use of outriggers.

The boom should never be used to raise or lower a load. If the boom is at right angles and you lower the

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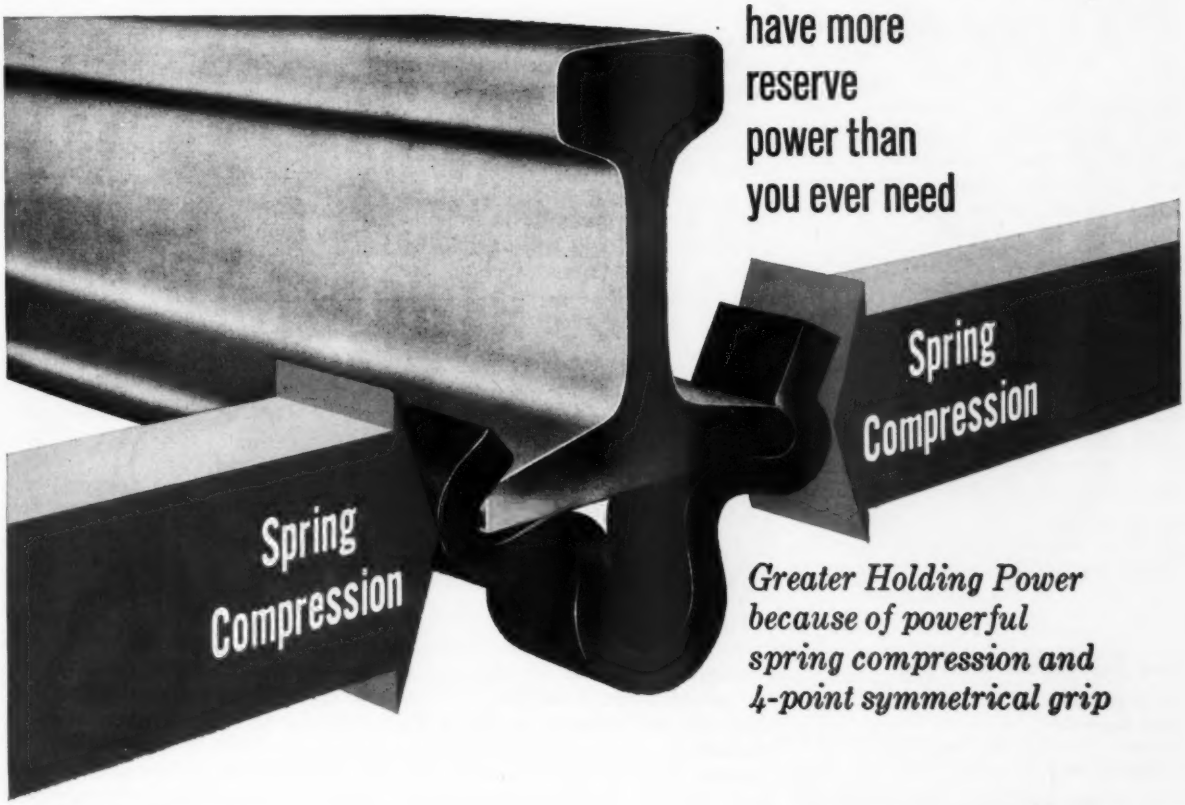

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boom, the load gets farther from the crane and creates more leverage. This might cause the machine to overturn.

The railroad-type crane will handle a heavy load at a greater radius in front of the crane than on the side. The operator should be very careful when swinging a heavy load to the side. Whenever there is any doubt as to whether the crane will handle the load at the radius at which the boom is set, the operator should keep the load no higher than 6 to 8 in above the ground when swinging. This way, when the load becomes too heavy, the load will strike the ground and will relieve the weight on the end of the boom. On the other hand, if the load were 6 to 8 ft in the air, it would tip the crane over.

When lowering the load, never permit it to drop too fast. The brake should be released slightly.

There should be a foreman in charge of the work. If a foreman is not available, then someone should be designated to oversee the work and to be responsible.

Small raises for steel spans

When steel spans must be raised four or five inches, what is the best way to do this? Explain. Should concrete blocks or steel shims be used? Why?

Shim in increments

By J. Zeleznikar
Assistant Engineer
Duluth, Missabe & Iron Range
Duluth, Minn.

In the majority of cases, the best way to raise a bridge span from 4 to 5 in is to use steel shims in approximately 1-in increments. Because of the ease of handling, the weight and size of the shim to use will govern the common thickness. After all the shims are in place, they may be welded together or boxed in with steel plate.

The main advantage of using a series of shim plates is that, at any time during the shimming operation, the bridge may be placed into temporary service in a relatively short time. Whereas, when using a solid shim for the entire raise (such as a concrete block), a temporary bent must be constructed to carry traffic across the span. It might also be necessary to place additional stiffeners on the girders.

Can use timber blocking

By A. B. Wang
B&B Supervisor
Monon
Lafayette, Ind.

A 4 or 5-in raise by prepared blocks does not give too much room to make a good block. On sidetrack bridges, or even on main-line structures, blocking can be made of solid treated timber. These will last about 10 years and can easily be renewed.

If made of concrete, blocks should be made of high-strength concrete with as much reinforcing steel as possible. A composition pad should be put under the shoe directly over the concrete block. Even so, it is sometimes possible that the corners will be sheared off.

I would prefer using 4 or 5-in wide flanged I-beams welded together and reinforced to a steel slab. In any case, provisions should be made for anchor-bolt holes and extension of the old anchor bolts by welding on additional sections for the required raise.

Prefers steel shims

By J. W. Porter
Supervisor B&B
Great Northern
Minot, N. D.

I believe the most commonly used type today is the deck-plate girder spans so I will discuss a method used for raising this type.

To raise a steel span 4 or 5 in under traffic, it is necessary to make preparations for this in advance of the actual work. A number of steel shims should be cut from ½-in boiler plate of the same dimensions as the bolster. Holes should be drilled in them for the bolster bolts to pass through. It will require longer bolster bolts also.

The raise is generally done by placing three jacks, ratchet or hydraulic, of sufficient capacity to handle the weight. Two jacks should be placed under the floor or end beam and one under the girder as close to the bolster as possible. A thin piece of wood should be placed on top of each jack to prevent slipping. One end of the span should be raised at a time as this will keep the track in line and eliminate the danger of the span shifting out of line.

When raising the span, the shim plates should be placed between the girder and bolster as soon as there is enough space to insert them.

When the raise is completed to the height required, the bolster bolts are placed and tightened. The threads on these bolts should be checked with a chisel so the nuts will not become loose and come off. The shims should be spot-welded so they will stay in place. While this is being done, the track men can raise the track on the approaches.

Steel shims should be used on this kind of raise as a block of concrete 4 or 5 in thick, even though it is precast and well reinforced, could become broken under heavy traffic. I prefer the steel shims.

Make a grillage

By F. J. Bidwell
Master Carpenter
Erie-Lackawanna
Scranton, Pa.

The first thing to do is have all materials and tools on hand, such as jacks, blocking and wedges, so there will be no delays once a job is started.

When jacks are set and ready to raise the span and the anchor bolts are all loosened, the track gang should have track jacks set under approach rails. Span and approach rails should go up evenly.

(*Please turn to page 50*)

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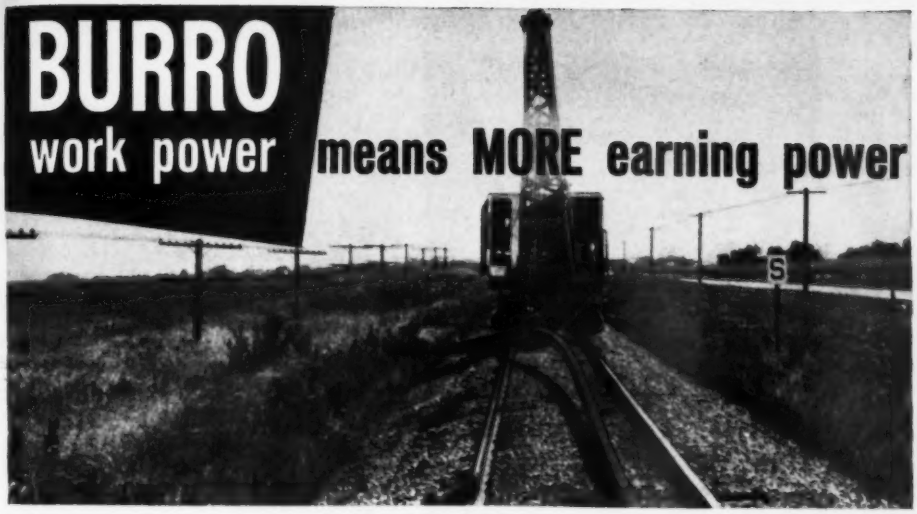

Burro Crane, with threader suspended from boom of the crane to guide the rail, shifting new welded rail from the shoulder to the center of track.

Model 40 Burro Locomotive Crane Ditcher with long digging radius to permit starting ditch ample distance from track. This Model 40 Burro not only digs ditch and loads both near and far ends of cars, but also hauls its own cars with its own power.

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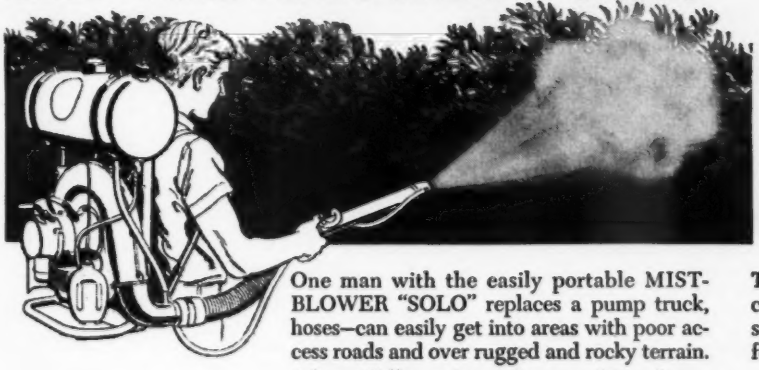

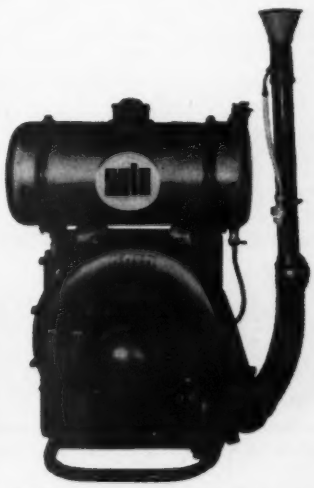

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Apply anchors mechanically...

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You can build safer, smoother roadbed, faster and at lower cost, by mechanizing your anchor installation with a Racine "Anchor-Fast" anchor applicator. This fast, on-track machine saves at least 48 man-hours daily... saves hundreds of hours if you normally use your entire gang to "close up" at end of a day. It's one-man operated... applies Fair, Gautier, Woodings, Tru-Temper, Unit, M&S and Reliance anchors hydraulically, *per anchor manufacturers' specifications.*

Presses anchor to tie for positive grip

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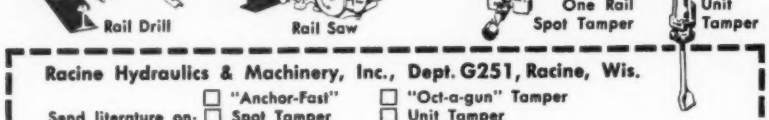

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What's the answer? (cont'd)

When the height of the raise does not exceed four or five inches, it is not necessary to do anything except raise one end the allotted amount and place grillage underneath the span.

A grillage made of channels or second-hand rails should be drilled to permit ⅞-in round iron rods with threads on both ends to be inserted through them. One-inch pipe should be cut for spacers between each web. About four rods to each grillage are sufficient. If the concrete on which the grillage sets is uneven, I would suggest using strips of sheet lead to provide a solid bearing.

The jacks should then be removed to allow the weight of the spans to rest on the grillage. The anchor bolts should be checked for length and, if found to be short, they should all be cut off evenly, after which new wedge-shape bolts can be welded to them.

When one end of a span is completed and the bridge gang is moving to work on the other end, the carpenter gang can start drilling into the concrete for placing dowels and then boxing in the grillage for receiving concrete. As the concrete is poured, it is important to work it thoroughly into the grillage. The box should be filled slightly above the shoes of the span to allow for shrinkage.

With the weight of the span resting on the grillage, trains can be run over the span before the concrete is set with no delay to train schedules.

In my experience, I have found this to be one of the strongest supports, as well as being economical.

Local conditions determine

By J. E. Heck
Supervisor B&B
Chesapeake & Ohio
Ashland, Ky.

The first part of this question relating to raising a steel span four or five inches is very broad and will probably produce about the same number of answers as there are bridges.

Our experience along this line has been, predominately, with small

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100. **Dual Tie Saw and Tie-Bed Scarifier**—Combine to remove tie, scarify bed, insert new tie. (Page 2)

101. **Track Fastenings**—Bethlehem stocks track bolts and spikes in full range of sizes. (Page 3)

102. **Models JRMT and JSMT Utility Tampers**—Designed to perform wide range of tamping jobs. (Page 4)

103. **Equipment Maintenance**—Gives four-point program for reducing maintenance costs. (Page 6)

104. **Model 610C Motor Scraper**—New 18-cu yd unit has 24 per cent more horsepower. (Page 8)

105. **Ureabor 31**—New granular combination of three weed killers for dry application. (Page 11)

106. **Ureabor 62**—Chemically the same as Ureabor 31 but is double strength. (Page 11)

107. **Improved Fair Rail Anchor**—Points out features of anchor and advantages of its use. (Page 12)

108. **Model W84B Hydraulic Spike Puller**—Says one man can pull 15 to 20 spikes per minute. (Page 14)

109. **Gautier Rail Anchor**—Applied by hand or machine. Says anchor cannot be overdriven. (Page 17)

110. **Trak-Surfacer**—Points out four advantages of wire-type unit for raising track. (Page 19)

111. **Ajax Water Service**—Gives information on drinking water service for work crews. (Page 20)

112. **Bantam Rail-Roader**—Describes features of unit for on-track or off-track use. (Page 22)

113. **Track Welding**—Oxweld apparatus for repairing engine burns, battered rail ends. (Page 24)

114. **Plasser Tampers**—Shows units available, including one with self-propelled front dolly. (Page 39)

115. **Model 441 Speed Swing**—Illustrates machine in action and lists attachments available. (Page 41)

116. **RTW Tie Handler**—Says one-man machine can position 1000 ties in working day. (Page 43)

117. **Woodings Rail Anchor**—Says spring compression, 4-point grip give reserve power. (Page 47)

118. **Model 40 Buro Crane Ditcher**—Has long digging radius for ditching and loading cars. (Page 49)

119. **Portable Chemical Sprayer**—Knapsack model for spraying weeds, brush. (Page 49)

120. **Aeroquip Hose Lines**—Explains why these units were specified on new ballast cleaner. (Page 53)

121. **Rail Grinding Service**—Contract arrangement obviates need for capital investment. (Page 54)

122. **Tool and Supply Car**—Tubular steel unit weighs 140 lb and has capacity of 1500 lb. (Page 54)

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123. **CampCars**—Says highway-type housing units pay for themselves in about a year. (Page 55)

124. **Stellite Exhaust-Valve Conversion Kit**—Says new units give longer valve life. (Page 56)

125. **Prestressed Concrete Piling**—Stocked in lengths from 30 to 75 ft in 5-ft increments. (Page 57)

126. **Paint Hammer**—Makes spot on ties to indicate removal or on rails to indicate class. (Page 58)

127. **Water Coolers**—Portable units are available in 23 sizes and models. (Page 59)

128. **Circular Rail Saw**—Says one man can cut standard rails in 4 min with this saw. (Page 59)

129. **Ken-Ray Model 340 Hydrant**—Points out features of self-de-icing, non-freeze unit. (Page 59)

130. **Urab Brush Killer**—Available in liquid, pelletized or granular form. (Page 60)

131. **Track-laying Cranes**—Seven-ton unit lays welded rail at ¾-mph rate. (Inside back cover)

132. **Electric Snow Melters**—Available in either ballast or tubular types. (Back Cover)

Free Literature offered in advertisements

133. **Lubrication Guide**—Gulf Oil offers 88-page illustrated booklet on the lubrication and maintenance of engines, air tools, wire rope and earthmoving equipment. Railroad men will find information very helpful. (Page 6)

134. **Concrete Shell Roofs**—Offers literature on design of barrel-shell roofs. (Page 16)

135. **Large Multi-Plate Culverts**—Offers information on compression-ring theory of design. (Page 21)

136. **Track Tool Transporter**—Bulletin 186 describes this lightweight push car. (Page 45)

137. **Anchor Applicator**—Racine will send literature on its "Anchor-Fast" applicator. Also on its spot tamper (No. 138 on card), rail saw (No. 139), "Oct-a-gun" tamper (No. 140), unit tamper (No. 141), and rail drill (No. 142). (Page 50)

143. **Expansion Plates and Bushings**—Manual 55 gives data on Lubrite self-lubricating units. (Page 57)

Other free literature offered by manufacturers

144. **Rubber Abrasion Plates**—Bulletin tells use with insulated joints. *Railroad Rubber Products, Inc.*

145. **Switch Heaters**—Bulletin 567 gives information and data on these units. *Heatrex, Inc.*

146. **Timber Connectors**—New Catalog describes devices and tools. *Timber Engineering Company.*

147. **Track Maintenance Equipment**—Included in Bulletin 293 are illustrations and descriptions of machines for rail-renewal, tie-removal and track raising, surfacing and lining operations. *Nordberg Manufacturing Company.*

148. **Concrete Tie**—New folder describes and illustrates the MR-3 prestressed concrete tie, including fastenings and accessories. Seven installations of the ties are briefly described. *American Concrete Crosstie Corp.*

149. **Vegetation Control**—Booklet describes the DuPont line of chemicals and how they should be used for maximum effectiveness. Also tells how they can be combined with other herbicides. *E. I. du Pont de Nemours & Co.*

150. **Track Equipment**—Catalog 10 describes and illustrates the Nolan line of M/W work equipment, including rail loader, tool and supply car, push car and dollies. Bumping posts also are described. *The Nolan Company.*

151. **Resiweld Epoxies**—A technical manual entitled "Resiweld Book No. 2" gives information on line of adhesives, plastic alloys, sealants and coatings. Properties and directions for using are given for each material. *H. B. Fuller Co.*

Items described in Product Section

200. **Multiple Setoff**—Self-propelled unit can be lengthened to take all machines in gang. (Page 38)

201. **Kwik-Mix Hi-Lifter**—Can be equipped with a 1¾-cu yd capacity front-end loader. (Page 38)

202. **Tie Spacer**—New device enables operator to space ties without prior marking on rails. (Page 38)

203. **Cushioned Car Stop**—Force of moving cars is transferred to sides of two ties. (Page 38)

204. **Air-cooled Engine**—Kohler 9.5-hp unit is available with an electric starter. (Page 38)

205. **Racor Adjustable Rail Brace**—Bolts now can be installed from top of plate. (Page 40)

206. **Track Liner**—New machine uses weights to bump track into final position. (Page 40)

207. **Marking Gun**—Nozzle can be reversed by unscrewing from new retaining sleeve. (Page 40)

208. **Hose Fittings**—In three pieces for quick, easy assembly to high-pressure hoses. (Page 40)

209. **Electronic Surfacing Device**—Two 34-ft-long beams and a computer for surfacing track. (Page 40)

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bridges of 100-ft spans or less of the deck-plate-girder or through-plate-girder design. We have found that each job has its own peculiarities requiring something different from the others in method and procedure.

There are, of course, certain fundamental practices which apply to all jobs. First and most important is a careful and thorough study in the field so as to be fully and newly acquainted with all the conditions. Then the job should be planned and a schedule of procedure worked out, including a list of the equipment to be used and a bill of material needed. We find that it pays off to get the bridge engineer in on job planning, especially if it is a large bridge or if there are any unusual conditions which may be encountered.

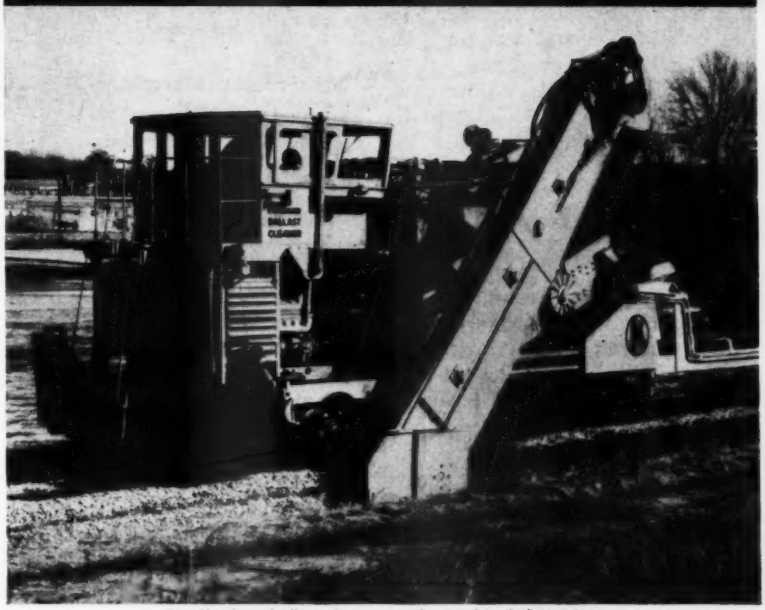
The permanent blocking should be placed at the job site and checked before the job is started. If precast-concrete blocks are to be used, they should be poured and cured for 30 days or more before they are to be installed. A solid and secure foundation for jacks must be provided if one is not already available, and the girders reinforced at the jacking points to prevent damaging the steel. We usually install temporary stiffeners of suitable size oak timbers for this reinforcement.

Preparations should be made to provide a suitable run-off from the raised span to adjacent spans or to the approach track quickly. An ample supply of blocking, in various thicknesses, should be on hand so that the raise can be blocked off quickly at any point if necessary.

All points should be raised simultaneously to avoid shifting the bridge. Jacks should be set for head lifting if at all possible. We sometimes rig up a timber framework under the top flanges for jacking so that jacks can be set for head lifting. An extra jack, the size and capacity of those being used, should be on hand for emergency use in case one of the jacks becomes fouled so that it cannot be lowered and released.

Preparations also must be made for anchoring the bridge at the new elevation. The method of doing this

Aeroquip Hose Lines Are Specified for New Kershaw Ballast Cleaner

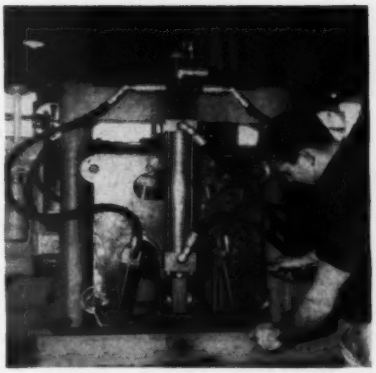


The Kershaw ballast cleaner can be used in skeletonizing and undercutting as well as ballast cleaning operations.

Latest addition to the modern Kershaw line of labor-saving track and maintenance equipment is the new ballast cleaner. This intricate machine is capable of picking up old ballast from the track shoulder, screening the dirt and other foreign materials and returning clean ballast to the track, ready for use again. Aeroquip Hose Lines with Reusable Fittings are used exclusively on the new ballast cleaner, as they are on other Kershaw equipment.

"Aeroquip Hose Lines are the best we can buy for our machines," reports John Holley, Kershaw's Chief Engineer. "One big advantage is that we can make up hose lines of any length, right in our shop. Aeroquip also provides excellent hose line replacement service throughout the country."

Simplify replacement needs for all fluid lines with Aeroquip Hose and Reusable Fittings. Call your Aeroquip Distributor or write us for full details.



A workman installing Aeroquip Hose Lines on a Kershaw Super Jack-All. Hose and fittings are assembled quickly in the Kershaw plant.

Aeroquip

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also depends greatly on local conditions. We have lengthened the existing anchor bolts by welding on threaded stubs, but, in some cases, it is more practicable to cut out the old bolts and install new ones, depending on the condition of the bolts and bridge seats. We have also anchored the new blocking to the bridge seats, then anchored the bridge to the new blocking. This last method is more practicable where precast-concrete blocks are used. Holes can be left in the blocks and the anchor bolts grouted in after the bridge has been set down.

We prefer steel shims or prefabricated stools for the permanent blocking when it is to be no more than four or five inches in height as we have found that precast-concrete blocks of this thickness will sometimes break up under heavy traffic. We do, however, have some bridges on precast-concrete blocks 12 in or more in thickness. These blocks show no signs of breaking after several years in service.

Effect of surfacing on bridges

When programming undercutting or track-raising operations in the vicinity of bridges, what factors determine whether the structures should be raised, lowered or held at grade and still maintain a good grade line? Explain. How is this controlled in the field?

Several considerations

By C. L. Nelson
Senior Assistant Division Engineer
Southern Pacific Company
Ogden, Utah

One factor which determines whether a bridge structure should be raised or lowered has to do with the grades approaching the structure. These might be higher or lower than the grade over the structure and place the bridge under additional impact. The latter can be alleviated by a change in the approach grade.

Another factor might be that the structure has to be raised to provide additional clearance between the bottom of the structure and the stream bed or roadway running under it.

We have two types of bridge structures to consider:

(1) A ballasted deck over which the track is constructed in the same manner as if the track was on a standard roadbed. This track is not connected to the structure.

(2) An open deck in which the track is permanently connected to the structure.

Ballasted deck structures—If approaches are to be raised, it is no problem to raise the track over the structure other than to determine if the strength of the existing facility is such as to stand the weight of the additional ballast, and that the ballast guards are of sufficient height to retain the ballast.

If the approaches are to be lowered, this can be done by several different methods which are explained under "Open Decks." How-

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ever, the amount of lowering of the approaches is dependent on leaving sufficient ballast between the bottom of the ties and the floor of the bridge to provide a cushion. The amount of cushion is further dependent on whether the track is a primary or secondary main or branch line and the allowable speeds permitted over structure.

Open-deck structures—Track over these structures cannot be raised or lowered without considerable expense in the revision of abutments, bearings, etc., which would be required if the structure itself is raised or lowered.

If the approaches are to be undercut for the purpose of renewing fouled ballast or of lowering the grade, this can be done in several ways, depending on the equipment available. The work may be done by the Mannix plow, with Cribex machines, leaving the track in place, or by removing the rail and ties and using a bulldozer. Or it may be done by hand. The method used also is dependent upon traffic conditions, whether the track can be removed and traffic diverted to other tracks, or whether the work is to be done under traffic.

If traffic is to be maintained over the structure during the work, the method of using the bulldozer is, of course, eliminated. When the fouled ballast is removed from under the approach ties a sufficient depth to enable fresh ballast to be applied under them, the track must be supported on temporary cribbing immediately approaching the structure until the new ballast is placed, after which the cribbing is removed and the track resurfaced.

Approaches should be surfaced so that both approaches have the same grade as the track over the structure and as far on each side as possible to eliminate impact loads on the bridge structure. If the same grade cannot be obtained, engineering in the field will determine the best possible grades to avoid as much impact as possible.

This is controlled in the field for both types of structures by taking a profile of the existing grades and computing the final grades, after which stakes are placed for the final top of rail grade and line.

Work is then progressed under proper supervision of both engineering and track forces.

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New books

An Introduction to Transportation Engineering—by William W. Hay. 505 pages, including illustrations, charts, tables, maps. John Wiley & Sons, Inc., 440 Park Avenue South, New York 16. $11.75.

The author, professor of railway civil engineering at the University of Illinois, has written his new book to fill the gap which he says exists in textbook material between the structual design and formation of plant and equipment and the economic functioning of transportation systems. Written at an introductory level, the book deals with the factors and principles relating to the "technological utility of the various modes of transport in moving persons and goods."

The book is intended to acquaint the student and general reader with the basic principles of transportation engineering and to provide the student with a sound basis for specializing in a particular branch of transportation after graduation. In addition, it is written to aid the practicing transportation engineer in establishing the technological requirements which must be met if a given mode of transport is to perform a specified task.

Professor Hay states that he has attempted to develop a unified approach to the problems encountered in transportation engineering by cutting across the conventional boundaries that have separated railways, highways, airways, waterways, pipelines, etc., into unrelated compartments.

Subjects covered include the nature and function of transportation in today's world, the propulsive resistance encountered by all forms of transport and the propulsive force needed to overcome it, the affect of roadway and operating characteristics on movement, methods of evaluating transport needs and the adaption of a particular mode to these needs, and the affects of technological characteristics on costs. In addition, the book discusses route design and location, traffic capacity, terminals, coordination and operational control.

Design of Welded Structural Connections —by Omer W. Blodgett and Dr. John B. Scalzi. 92 pages, 124 illustrations, tables, examples. Published by the James F. Lincoln Welding Foundation, Cleveland 17, Ohio. 8½ in by 11 in, double-wire bound. $1.00 in USA, $1.50 elsewhere, postpaid.

This is a new manual which reviews fundamental principles and summarizes current practices to aid structural engineers, designers, architects and fabricators in the design of welded connections for all types of structures. The manual also is intended to serve as a reference text for students enrolled in courses in structural-steel design.

The arc-welding process is briefly reviewed, including weldability of structural steels, welding procedures, distortion, erection and inspection. In addition, the manual describes the design of welded connections for bridges and buildings by both the elastic and plastic theories. Information contained in the sections on the design of connections includes the classification, strength and size of welds and the design of connections for columns, bases, splices, beams, angles, seats, stiffeners, trusses, cover plates and plate girders. In addition to the design of connections, the sections on plastic theory give the philosophy and limitations of plastic design, basis for the plastic theory, factor of safety, load factors for welds and the relationship between elastic and plastic theories.

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Biographical briefs

(*Continued from page 10*)

p. 10), was born at Howell, Ga. He entered the service of the Southern in 1947 as a laborer at Howell, being promoted to relief section foreman the following year. Mr. Parrish was further promoted to section foreman at Warner Robins, Ga., in 1954 and assistant supervisor at Sheffield, Ala., in 1955. He was advanced to supervisor track at Dalton, Ga., in 1957, the position he held at the time of his recent promotion.

Dave C. Layman, 46, who was recently promoted to supervisor bridges and buildings on the Illinois Central at Paducah, Ky. (*RT&S*, Feb., p. 10), was born at

Millwood, Ky. He entered the service of the IC in 1936 as a bridge and building carpenter on the Kentucky division. Subsequently, Mr. Layman was promoted to assistant foreman, foreman and general foreman. He was serving in the latter capacity, at the time of his recent promotion.

To the editor

Describes response to article on snow blower

Chicago

To the Editor:

You will recall publishing an article in the March 1961 issue of *Railway Track and Structures* covering the "Simmons Cyclone."

As a result of this article, I and the Milwaukee Road have had many inquiries about this appliance, one being from Mr. Henry, chief engineer of the Pennsylvania, which led to several members of their Machinery committee requesting a demonstration of the snow blower. Another inquiry stated the Matisa representative in Africa had read the article and would like a license to manufacture the appliance for the removal of sand.

I would like you to know that your article has been very beneficial to me, and has led to my receiving requests from several good companies who are desirous of manufacturing this appliance.

R. G. Simmons
General Roadmaster
Milwaukee Road

Association news

AREA to hold 1½-day meetings in alternate years

Annual meetings of the AREA through 1965, will consist of alternate 1½-day and 2½-day (full-scale) sessions, according to Neal D. Howard, executive secretary of the association.

Invitations to the 1½-day conventions, to be held in 1962 and 1964, will be restricted to the officers and directors of the association, to the chairmen, vice chairmen and secretaries of committees, and to the subcommittee chairmen of the different committees—a total of approximately 250 persons. However, there will be no prohibition against the attendance of any other railroad members of the association or railroad guests who, with the permission of, or upon instructions from, their respective railroads, desire to attend. Likewise, there will be no restriction on the attendance of non-railroad members of the association or guests from the railway supply industry. Furthermore, in the interest of minimizing the off-the-job time of the railroad men attending the 1½-day conventions, these conventions will be held on a Friday and Saturday.

The 2½-day sessions will be held in 1963 and 1965, the latter in conjunction with the next exhibit of the National Railway Appliances Association. The meet-

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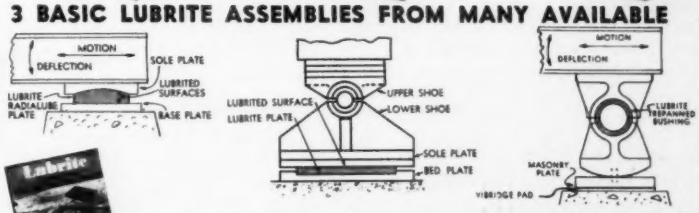

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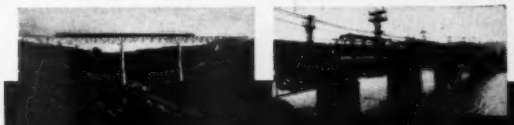

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ings in these years will be full-program sessions and will be open to the entire membership of the association, as in the past.

The 1962 meeting of the AREA will be held on March 9-10 at the Conrad Hilton hotel, Chicago.

Two standing committees of the AREA have scheduled meetings to be held in July. These are:

Economics of Railway Labor, July 10-11, Country club, DuBois, Pa., including an inspection trip on the Baltimore & Ohio; Iron and Steel Structures, July 26-27, Pick-Carter hotel, Cleveland, Ohio.

A meeting of the Board of Direction will be held on August 11 at the AAR research center, Chicago. Among other things, the board will consider the proposed 1962 research budget of the AAR Engineering Division, which will include the funds recommended by AREA committees.

Mississippi Valley Maintenance of Way Club

At the last meeting of the club, held at the Ambassador-Kingsway hotel, St. Louis, Mo., on May 8, the following officers were elected to serve during the ensuing year: President—R. D. Hellweg, assistant regional engineer, Gulf, Mobile & Ohio, Bloomington, Ill., who was promoted from first vice president; first vice president—Clarence Baker, assistant chief engineer, Missouri Pacific, St. Louis, who was advanced from second vice president; second vice president—W. G. Reppell, chief engineer, Manufacturers Railroad Company, St. Louis; treasurer—E. R. O'Heron, supervisor, engineering department, Missouri Pacific, St. Louis; secretary—W. H. Stumm, regional engineer, Gulf, Mobile & Ohio, Bloomington, Ill.

The following were elected to serve as directors for terms of two years: O. E. Fort, assistant chief engineer, Frisco, Springfield, Mo.; N. R. Forbes, division engineer, Illinois Central, Carbondale, Ill.; and Manuel Garcia, assistant chief engineer, Alton & Southern, East St. Louis, Mo.

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Supply trade news

ARMCO DRAINAGE & METAL PRODUCTS—This company has realined its ten divisions into three major areas, the Atlantic, Central and Western, according to an announcement by **W. O. Robertson,** president. Each area will be headed by a general manager who will be in charge of all activities within the area, including sales and production management.

The following have been appointed general managers of the new areas:

James E. Kunkler, Atlantic area, with headquarters at Middletown, Ohio; **Alvin J. Mistler,** Central area, at Topeka, Kan.; and **William W. Mains,** Western area, at Denver, Colo.

The announcement also states that Armco's steel building operations will be combined this fall. Production gradually will be shifted from Middletown, Ohio, to its larger plant at Washington Court House, Ohio.

CHIPMAN CHEMICAL COMPANY—Robert K. Huckins has been appointed director of the technical service department of the Central district of this company, with headquarters at Chicago. A graduate of the University of Massachusetts with a bachelor's degree in biology, Mr. Huckins has served with the Chipman Chemical Company since 1957. At the time of his recent appointment he was serving as technical service representative with headquarters at Bound Brook, N. J.

CHIPMAN CHEMICALS LIMITED—D. R. Fraser has been appointed president of this company, with headquarters at Hamilton, Ont., succeeding **J. H. D. Ross** who has retired, according to an announcement by **W. H. Moyer,** chairman of the board. Chipman Chemicals Limited is an associate company of Chipman Chemical Company, Inc.

JOHNSON RUBBER COMPANY—The St. Louis Railway Supply Company, St. Louis, Mo., has been appointed representative for Johnson Rubber in the St. Louis area, according to an announcement by **Richard E. Morrison,** manager of the Railroad Sales division. The company, which maintains offices in the Railway Exchange Building, will handle sales of Johnson's VulcaBond rail joint.

RAIL JOINT COMPANY—Calvin L. Bartley, sales representative at Chicago, has been promoted to western sales manager of this company, which is a division of **Poor & Co.** Mr. Bartley will continue to maintain headquarters at Chicago.

SYMINGTON WAYNE CORPORATION—John A. Stueven has been appointed sales engineer, Symington Division. Mr. Stueven formerly was sales engineer, Sperry Rail Service, Division of Howe Sound Co.

Obituary

James W. Crossett, 52, district manager, railway publications, Simmons-Boardman Publishing Corporation, at Chicago, died on May 26 at the Hinsdale Sanatarium and Hospital, Hinsdale, Ill.

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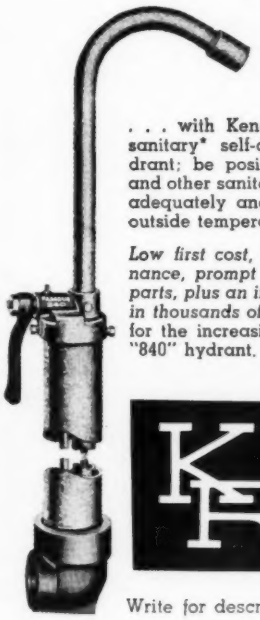

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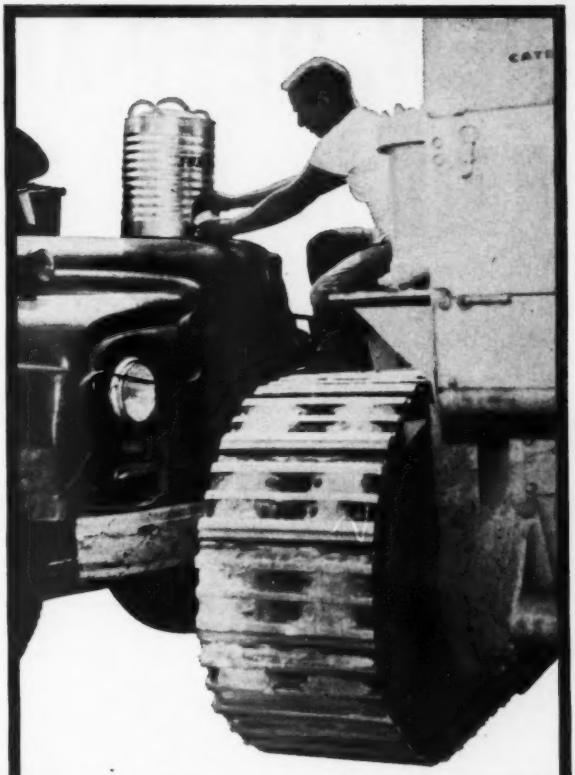

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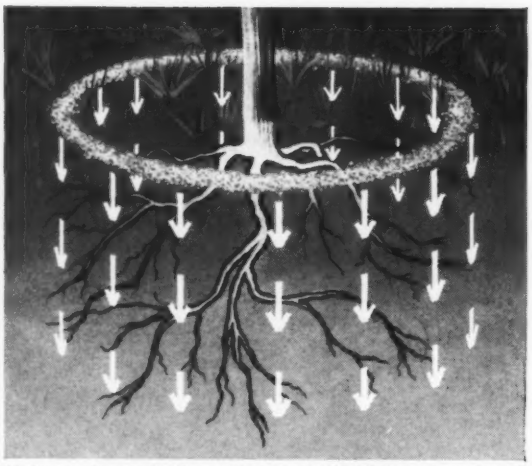

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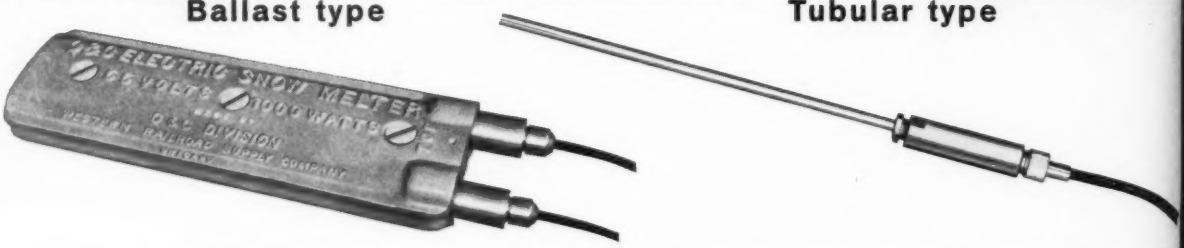

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